Executive Remuneration, Financial Performance and Corporate Governance in UK and Spanish Listed Firms

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Thesis Summary

This study examines the relationship between executive directors' remuneration and the financial performance and corporate governance arrangements of the UK and Spanish listed firms. These countries' corporate governance framework has been shaped by differences in legal origin, culture and backgrounds. For example, the UK legal arrangements can be defined as to be constituted in common-law, whereas for Spanish firms, the legal arrangement is based on civil law.

We estimate both static and dynamic regression models to test our hypotheses and we estimate our regression using Ordinary Least Squares (OLS) and the Generalised Method of Moments (GMM).

Estimated results for both countries show that directors' remuneration levels are positively related with measures of firm value and financial performance. This means that remuneration levels do not lead to a point whereby firm value is reduced due to excessive remuneration. These results hold for our long-run estimates. That is, estimates based on panel cointegration and panel error correction. Measures of corporate governance also impacts on the level of executive pay. Our results have important implications for existing corporate governance arrangements and how the interests of stakeholders are protected. For example, long-run results suggest that directors' remuneration adjusts in a way to capture variation in financial performance.

Key words: agency theory; dynamic setting; directors' compensation; panel cointegration; panel error-correction models (ECMs).

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Chapter 1 Introduction

1.1 Background

The level of executive directors' remuneration has been an issue much debated in many countries. CEOs and other executive directors were blamed for paying themselves excessive compensation thus reducing shareholders' wealth which was fuelled by increased risk taking. This increased risk taking has been considered to be one of the main causes of the financial crisis in 2008 (Dong, 2014). Directors were considered to receive large amounts of money long before the crisis and these issues have been addressed in various research papers. However, recent corporate scandals, instability of the financial systems, loss of confidence and following changes in corporate governance regulations have caused a particular rise in the interest for this topic.

It was generally accepted by the public, regulators, academic researchers, social media, etc. that weak corporate governance was one of the major aspects contributing to the crisis. Failures in corporate governance arrangements have not provided protection against excessive risk taking (Kirkpatrick, 2009). Main aspects which are believed to have failed are risk management system, transparency and disclosure, board practices and remuneration system (Kumar and Singh, 2013). Some argue that the structure of remuneration itself has caused major problems (Bhagat and Bolton, 2014); others also highlight that remuneration systems were not linked to long-term objectives of firms and their strategies (Kirkpatrick, 2009).

These problems suggested that there was a need to develop new strategies and corporate governance reforms. This led many researchers, practitioners and regulators contributing to literature by providing some insights as to how these problems could potentially be avoided in

the future taking into account lessons learnt (Kumar and Singh, 2013). Despite the vast amount of literature on corporate governance, the issue of remuneration of executives still remains one of the most controversial issues much debated in many countries.

The research debate which takes place in academia in this area is the concept of remuneration. The main challenge is to determine whether remuneration causes problems as directors extract large amounts of compensation for themselves (Blanchard et al., 1994); or whether this can serve as a mechanism to motivate executives' to act in the best interest of firms and thus shareholders if it is linked to performance (Jensen and Murphy, 1990a). Conflicting views and mixed evidence are often presented and it makes this topic extremely interesting for investigation. Heated debate after the financial crisis, global change in corporate governance regulations and an interest to investigate this complicated link between remuneration, firm performance and corporate governance has motivated this research.

The main question most academics are trying answer is to what extent the interests of shareholders and directors can be aligned to resolve the agency problem. How do we make sure that executives act in the best interest of all stakeholders, especially shareholders? Being agents and acting on behalf of shareholders, executive directors are responsible for making the right choices to benefit shareholders. But how can this be achieved? As a result, boards of directors were examined in detail by researchers as the way these are structured has a direct effect on how firm is being monitored (Bryant and Davis, 2012) and this in turn influences firm performance and structure of directors' pay, which is often used as an incentive to motivate directors (Guthrie et al., 2012; Essen et al., 2013).

Some academics state that excessive CEO remuneration might not have been the main cause of the financial crisis as they report that since 2008 the way directors' are being compensated has not changed significantly (Dong, 2014). This argument ignores the cumulative effects of excessive pay on firm performance. Another issue which was brought to

attention was outlined by Hubbard (2005) – how high is actually high? How do we as researchers define “excessive”? These issues have motivated the main question which will be answered in this study, do directors actually exploit firm’s resources and overpay themselves or does their compensation depend on good financial performance for which they are rewarded.

The extent of corporate scandals also varied across different countries and it can be attributed to legal arrangements. La Porta et al. (1998) discuss the origin on the legal system influences the way corporate governance develops in countries. For example, if shareholders do not have opportunity to vote on corporate meetings, it is more likely that it would be easier for directors’ to set higher levels of compensation for themselves. This argument has motivated the examination of directors’ remuneration across two countries which have different corporate governance mechanisms, UK and Spain.

Despite a large number of academic research and vast amount of literature in corporate governance area, knowledge gaps still exist. The next chapter of this thesis will analyse the relevant literature and talk about these gaps in more detail. Here, we will just provide a brief summary to outline main issues which require addressing. First of all, there are currently not that many academic papers which concentrate on the analysis of Spanish firms. Second, there is a limited amount of research which takes the dynamic context into consideration. These are the main gaps in the study which need to be addressed.

Therefore, our research aims to contribute to existing literature by providing additional evidence for the Spanish companies. We also contribute to academia by using a new method in this area to test remuneration in the long-run, which could be applicable for future research and investigation. It is also important to consider the implications for regulators and practitioners and these will be covered in the last sections of our empirical chapters.

1.2 Research Objectives

This study investigates the relationship between executive directors' remuneration, firm performance and corporate governance for UK and Spanish listed firms. We set the main objectives as follows:

- To examine whether executive directors' remuneration is associated with the financial performance of firms.
- Given the difference in legal origins of countries, to investigate the relationship between firm performance and board monitoring and remuneration for the two countries.
- To test for the relation between executive compensation and corporate governance arrangements of both countries.
- To examine the long-term relationship between executive compensation and firm performance. This consideration allows us to test whether directors' compensation have a long-run relation with the performance of firms.

We estimate several models of executive remuneration using both ordinary least squares (OLS) and generalised methods of moments (GMM). Static and dynamic versions of our remuneration models are also examined in addition to the panel cointegration and panel error-correction. We provide justification for the chosen estimation method where appropriate. Some diagnostic tests will also be applied to test the validity of the estimates.

1.3 Summary of Results

We find that our hypotheses are supported in several respects. The relationship between directors' remuneration is positively related to firm performance and market value for both UK and Spanish firms. This suggests, perhaps controversially, that directors do not receive an "excessive" pay and that their remuneration isin line with the financial performance of the firms and acts as an incentive for executives.

The relationship between corporate governance variables and directors' remuneration is different in these two countries. We report that strong governance mechanisms contribute to a decrease in executives' pay in UK firms implying that stronger monitoring as it is recommend by Combined Code provides greater investors' protection. The presence of the Combined Code suggests that UK directors are less likely to expropriate from firms by setting themselves significantly high levels of compensation. This resultdoes not hold for Spanish firms, despite the increase in board control over time. This finding suggests that investor protection is less strong for Spanish investors.

Even though we have not incorporated explanatory variables which measure legal arrangements in countries, we attribute differences in corporate governance mechanisms to differences in law origin as described by La Porta et al. (1998), implying that common-law countries (e.g. UK) have greater investor protection and thus better monitoring and corporate governance arrangements than countries originating from civil law (e.g. Spain).

We also report positive cointegration relationship between remuneration and firm performance suggesting that in the long-run variables will be moving in the same direction despite economic or financial shocks in the short-run.

1.4 Organisation of the Thesis

An overview of the remaining chapters of the thesis is as follows: Chapter two reviews the relevant literature in an area. In particular, the chapter draws on the agency problem which underpins this study. We then move on to discuss what determines executive directors' remuneration and how monitoring can be used to influence the managerial behaviour. We also look at legal arrangements of countries under which firms operate and that determines the quality of their corporate governance control. This will help us to develop hypotheses as well as explain why this area of study was chosen for the investigation.

Chapter three outlines the adopted methodology to test our predicted hypotheses. We use OLS and GMM estimation methods to test for static and dynamic relations between remuneration, firm performance and corporate governance mechanisms. Panel cointegration and panel error-correction models are applied to test for the existence of long-run relationship. This chapter also presents descriptive statistics and correlation coefficients.

Chapter four analyses the empirical results for UK listed firms. It is reported that executive directors' remuneration increases as we observe positive changes in firm performance, firm size and market value. Strong corporate governance variables which measure increase in board control contribute towards decrease in directors' pay.

Chapter five reports the results for Spanish firms. We find the same evidence regarding firm performance and remuneration; however, corporate governance mechanisms found to have a different effect on executives' compensation. Evidence shows that greater monitoring does not necessarily lead to a decrease in pay as it was predicted. We attribute that to the fact that differences in cultural background, the origin of law has an effect on how monitoring mechanisms are enforced in firms.

Both empirical chapters provide strong evidence to support that good financial performance and increased market value have a positive effect on executive directors' remuneration in both countries. In other words, in contrast to what is being discussed in the world regarding excessive compensation packs, directors may not take advantage by expropriating funds from firms and their compensation moves in line with the firm value and other financial indicators.

Chapter six examines long-term relationship between firm performance and remuneration. Our results for the panel cointegration and panel error correction models (ECMs) show that there is a positive cointegration between remuneration and firm performance. We find that in the long-run there is a co-movement between explanatory variables and remuneration, meaning that despite some financial economic shocks taking place, in the long-run the variables will adjust and will move in the same direction.

Final chapter concludes the thesis by providing a summary of main findings, stating contributions to academia and discussing limitations of the research. The study also provides recommendations for future research. In general our results have important implications for research in corporate governance. By showing negative relationship between strong corporate governance mechanisms and directors' remuneration in the UK, our study implies that it is extremely important for countries to develop Code of Good Practice containing recommendations for firms to have greater board control to resolve the agency issues and make sure that directors act in the best interests of shareholders. Our long-run relations imply that even if directors are overpaid in one year it is likely that their payment will adjust over time to match firm performance and market value. On average our results show that directors cannot be considered to receive "excessive" pay as it moves in line with firms' financial indicators.

Chapter 2 Literature Review

2.1 Introduction

This chapter reviews the literature on corporate governance, firm performance and executive directors' remuneration. This reviewing aims to support the empirical research that will be pursued in this thesis. The reason for conducting the review is that before starting any research process, all existing knowledge and findings in the subject area must be taken into account in order to be able to identify and make an actual contribution to a discipline. Literature review helps the researcher to develop a better understanding of the discipline as well as identifying the existing gap in prior studies.

Corporate governance is an area which has undergone quite substantial changes in the past few decades, especially after the corporate scandals took place and 2008 financial crisis, thus it has attracted a lot of attention amongst researchers, social media, policy makers, investors and the public in general. It is believed that executives' pay ishighly interconnected with this scandals and the failure of firms by pursuing their own personal interest which is detrimental for the firm they work for.

Many empirical researches have addressed this problem before; however, there is still a large scope for investigation. We interconnect the issues associated with corporate governance and firm performance in order to determine how they relate to executive pay.

2.2 Corporate governance theories

A growing body of literature on corporate governance is based on different theories widely discussed in academia. Agency theory is considered to be predominant base for many research questions in this field and is used as the main underpinning theory, especially when investigating links between the level of monitoring, incentives and firm performance (e.g. Misangyi and Acharya, 2014). Corporate governance arrangements are also seen as controlling and monitoring mechanisms.

The theoretical ground on which our research is based is the agency theory; however, other theories have an important bearing on agency theory. As such, we also examine corporate governance theories after introducing agency theory, followed by the stewardship theory, stakeholder theory and resource dependency theory.

2.2.1 Agency Theory

The agency theory put forward by Jensen and Meckling (1976) forms the basis of our research question[1]. Elements of the agency theory originally developed in both the economics and management fields. It is considered to be a foundation theory in corporate governance and has been used extensively to underpin various research questions and problems(see Williamson, 1988; Lan and Heracleous, 2010; Dalton et al., 2003 and others). Many researchers (see e.g., Lan and Heracleous, 2010; Rutherford et al., 2007) highlight the importance of this theory and also state that the agency theory can be considered to be the cornerstone of the corporate governance literature and is used to analyse the relationship

[1] Agency theory can be traced back to Adam Smith (Denis and McConnell, 2003), when he was describing specialisation and the division of labor in 1776. However, during the early 1970's researchers investigated the risk-sharing attitudes of different parties under information asymmetry. Risk sharing arises when cooperating parties' attitudes towards risk differ (Eisenhardt, 1989)

between boards of directors, who should represent shareholders' interests and shareholders who are owners of firms. This link is in particularly important when examining the financial performance of the firm, its ownership structure (Thomsen and Pedersen, 2000), and the monitoring and control of boards of directors (Hillman et al., 2000; Johnson et al., 1996) when seeking to assess how conflicts of interests between the board of directors and shareholders can be resolved (Coles et al., 2001).

The agency theory is relevant for the activities associated with the relationship between the agent and the principal. In general terms it is defined as the conflict of interest between the agent and the principal and is most apparent when asymmetrical information exists, meaning that the agent has information that the principal does not have (Jensen and Meckling, 1976).

The level of the agency problem may decrease or increase, depending on the ownership structure of the firm and the amount of investor protection that exist both at a country level and the provisions in the articles of memorandum of the firm. Filatotchev et al. (2013), for example, highlight the importance of institutional structure on agency relationships in their recent study and suggest that cross-national comparison of corporate governance should take this into account. In other words from the corporate governance perspective, when different incentives are created and rules for monitoring are set, these are largely affected by the established set of values.

The agency theory thus attempts to address and analyse conflicts of interests which arise as a result of divergence of interests. This theory also analyses the lack of alignment of owner and agent interests in terms of goal setting, actions, etc., which causes an increase in agency costs in a firm (Jensen, 1986; Nyberg et al., 2010). These agency costs, of course, vary across firms and largely depend on financing decisions, leverage levels and capital structure (Morellec et al., 2012). Managers have to make complicated decisions and expect to be remunerated for their efforts as they make decisions regarding risk taking. Thus agency

problem is central to the remuneration arrangements of firms. Good corporate governance seeks to provide a framework through which the interests of all parties are better aligned.

The risk-sharing problem (also known as principal-agent problem) was later on extended by researchers and became known as the agency problem which arises when cooperating parties have different objectives for the firm and this creates conflicting interests (Eisenhardt, 1989). This problem can be defined as “agency conflicts arising from a divergence between agents’ and principals’ utility functions, creating the potential for mischief”(Lan and Heracleous, 2010, p. 294). Sometimes this problem is described as a separation of ownership and control (Fama and Jensen, 1983). In academic literature the problem is known as principal-agent problem and it refers to a situation in which passive owners of the firm who do not take an active part in making decisions enjoy greater gains received from investments they made, whereas agents who act on behalf of shareholders enjoy smaller gains (Rutherford et al., 2007).

In accordance with authors such as Kern (2006), the principal-agent problem can be described as a preliminary point in many analytical studies as most literature on corporate governance emphasises this problem. Two main considerations usually cause this problem to exist within a firm. First, the agency problem can arise from information asymmetry (Nyberg et al., 2010), meaning that it is difficult for principals to monitor the behavior of the agents as they have different information about the performance of the firm. The agency problem also arises when there is no alignment between their interests (Kern, 2006). The extent of the information asymmetry usually varies between firms as it is likely to depend on the amount of private information which is only available to managers. For example, if there is a firm which faces many investment opportunities, managers are likely to have an access to private information about the future value of the projects thus making it difficult for shareholders to monitor available opportunities and managerial behaviour until the information is revealed. In

this case information asymmetry is likely to be very high in comparison to, say, a firm in which managers do not make investment decisions and only supervise assets and projects which already have been undertaken (Gaver and Gaver, 1995).

The agency conflict plays an important role in almost all aspects of the modern firm as all contracts created between any two parties can be traced to this problem (Lippert and Moore, 1995). The conflict becomes even more prominent as the firm is more often seen as a set of various contracts between different factors of production rather than a classical model of an entrepreneur (Fama, 1980). That means that economic agents are driven by self-interest thus increasing competition. This self-interest can be seen in cases where firms undertake excessive risk when also executives stand to be rewarded with favorable outcomes but the principal carry the bulk of the loses.

2.2.1.1 Moral hazard and adverse selection

It is also essential to mention two main issues which arise from the principal-agent problem. The first aspect is known as *moral hazard*, meaning that an agent can act in his own interest to the detriment of the firm, which can take the form of different actions. Firstly, moral hazard arises when managers lack the knowledge and skills they attest to managers that they have. Secondly, once this information is revealed to managers they do not necessarily act in the best interest of shareholders (Stoughton, 1993). Another aspect is *adverse selection*, which refers to the inability of the principal to verify agents' knowledge and skills before employment as they might falsely claim to have certain abilities that they do not have (Eisenhardt, 1989). Both of these problems are believed to be a result of principals and agents having different goals set within a firm and also possessing unequal information, i.e. information asymmetry problem (Rutherford et al., 2007).

Information asymmetry is an essential concept in the logic of the agency problem and therefore also is a central cause of moral hazard and adverse selection problems, because if information is evenly spread between managers and principals there will be no place for the agency problem to arise (Rutherford et al., 2007).

Wright et al. (2009, p. 353) sum up the negative effects of the agency problem as put forward by Jensen and Meckling (1976) and Fama and Jensen (1983) as follows: "…the separation of ownership from control and the dispersed ownership structure of the public corporation create agency costs that reduce shareholder wealth".

In general, the agency problem can be resolved through the monitoring of agents whether this entails the market for corporate control as in mergers and acquisitions, through good corporate governance and legal arrangements or through a creation of incentives contracts. However, such monitoring arrangements are unlikely to cover all eventualities. Incentives contracts are often incremental in relation to performance and shareholders are often unable to set their optimal levels. This means that incentives contracts can cause executive to take excessive risk. Thus, it can become extremely difficult and expensive to solve the agency problem and ensure that managers act in the best interests of the firm's owners (Clarke and Conyon, 1998; Gaver and Gaver, 1995). The agency problem also gives rise to a demand for corporate disclosure (Healy and Palepu, 2001).

2.2.1.2 Criticism of the agency theory

As any existing theory, the agency theory does not depict a panacea for all corporate ills. Traditional agency theory does not take into account trust and it is believed that managers always act in their self-interest (as previously discussed); it does not consider that not everyone will act in the same selfish way. Hendry (2002), for example, outlines that any

organisation cannot function effectively if there is no honesty or trust. If owners of the firm have to delegate main decision-making to managers, there have to be some form of loyalty. It is quite difficult to establish to what extent directors will exert opportunistic behaviour (Cuevas-Rodriguez et al., 2012). Wiseman et al. (2012) also support this view and highlight that real life situations are more complex and the agency theory does not always depict more diverse social environment.

Given the theory associated with the agency problem, an empiricist would also be interested in the nature of the evidence that supports the theory. It has been stated that the agency theory has a very important role in science. However, the question which rises here is to what extent the theory matches the reality, i.e. whether agents and principals act as it is expected according to the theory or not; therefore, certain criticism could be outlined if some empirical results are taken into account. One of the identified issues of the agency problem is risk-shifting. Mao (2003) states that we would expect that if the leverage of the firm increases the agency cost of debt should increase monotonically as well. However, the investigation performed by the researcher shows that this is not always the case meaning that increased debt of the firm does not imply that shareholders' attitude towards risk will be reduced. Even though this empirical study has its own limitations, such as data limitation, control of certain explanatory variables as it is outlined by Mao (2003), it is still a very good example which shows that theory does not always depict real life situations.

2.2.2 Stewardship Theory

Even though the agency theory is considered to be the dominant paradigm in corporate governance, other theories are suggested which try to overcome limitations of the agency theory which were previously discussed. For example, one of them is that agency theory

does not take trust and honesty into account and does not assume that people may behave in an altruistic way. In this section we will talk about stewardship theory, which also focuses on the relationship between shareholders and directors but using a completely different perspective. The similarity between these two theories is that both of them concentrate on the description of the role of directors when achieving firms' set objectives and goals (Tosi et al., 2003).The main difference, however, is what motivates directors to act in the best interest of the firm. Stewardship theory, as opposed to agency theory which assumes opportunistic behaviour, suggests that managers' interests are aligned to those of shareholders, in other words directors are determined to be good stewards of the firm they work for and there is no conflict of interest (Donaldson and Davis, 1991).

In contrast to agency theory which is based on economic paradigm, stewardship theory stems from sociology and psychology (Hernandez, 2012). Stewardship can be defined as "the extent to which an individual willingly subjugates his or her personal interests to act in protection of others' long-term welfare" (Hernandez, 2012, p.174). As opposed to the agency theory, the stewardship theory does not assume that directors will exhibit opportunistic behaviour and start exploiting firm resources for their own benefit (Davis et al., 1997). As it was mentioned before, the agency theory does not take trust into account; however, according to the stewardship theory it is believed that directors can be trusted (Davis et al., 1997).

The theory suggests that top managers are driven to make large profits for the company as their goals are congruent with that of the owners and they get satisfaction from contributing towards the success of the firm and aim to achieve good firm performance (Pande and Ansari, 2014). Directors are also behaving in a way to maximize, add to firm's value and maximise shareholders' returns (Davis et al., 1997).

The logical question arising in this context is what could motivate directors to have an incentive to serve the company. Donaldson (2008) explains that the ultimate driver is responsibility, feeling of autonomy and satisfaction from completing an interesting work. That implies that control mechanisms as suggested by the agency theory are not required. This can be supported by Tosi et al. (2003) who states that required monitoring proposed by agency theory can actually inhibit motivation and may case negative effects.

Davis et al. (2010) states that the stewardship theory can be widely applied to family-run business as they found that family members tend to have greater commitment and trust. Bubolz (2001) also supports this view by describing stewardship theory as being "ideal" to use in the family business context. Linking this back to the agency theory, if we consider family-run businesses, according to this view there should not be any agency costs involved and managers won't seek to high levels of remuneration just to benefit themselves only. As our research focuses on large corporations, all directors are not expected to behave in an altruistic way. Bearing in mind an argument that stewardship theory is more applicable for family business, this research will be based on the agency theory.

2.2.3 Stakeholder Theory

Stakeholder theory was originally developed by Ed Freeman in the 1980s. This theory suggests that firms create value for a broad group of different stakeholders (Harrison and Wicks, 2013).

The main assumption of the theory is that by creating value it will help firms bringing core stakeholders together. By concentrating on this aspect it becomes clear what managers' responsibilities are in terms of delivering on stakeholders' needs and articulating what types

of relationships should be formed between managers and main stakeholders (Freeman et al., 2004).

According to Freeman (1994), directors' responsibility should be extended by taking into account different stakeholders and this is based on the idea of fairness and moral rights of all people involved. The concept of solidarity is recognised as people should be free to enter mutual agreements and increase their value. It is also important to note that different stakeholders sometimes have conflicting expectations. Most Anglo-Saxon firms are concentrating on increasing shareholders' value. However, in other countries in may not be the first objective. For

example, in Japan firms focus on long-term growth rather than dividend payouts and in Germany, it is important to have employee's representation on the board (Jackson and Moerke, 2005). Therefore, different expectations considering a larger group of stakeholders will determine the objectives of firms.

The main criticism, however, is that it is not quite clear what it is meant by "value" and how this can be measured (Harrison and Wicks, 2013). When we consider economic point of view, this of course involves monetary value and imply that more legitimate stakeholders should get a larger share. This brings us back to our research question and remuneration. Linking this theory to the question of excessive remuneration, it can be explained that executives extract the larger stake for themselves; this implies that they are either the most legitimate stakeholders or they do not consider other stakeholders. If this is the case, then value is not created for all key stakeholders in the firm and again this theory won't be applicable for our research.

2.2.4 Resource Dependence Theory

Resource dependence theory can be used in corporate governance to explain the behaviour of directors within the firm. The theory postulates that the way organisations behave is largely influenced by the level of dependence on various types of resources (Pfeffer and Salancik, 1978). According to this theory, firms will always attempt to reduce dependency on some resources while trying to achieve independence over other resources; and this can be achieved via diversification (Pfeffer, 1972).

The theory can be traced back to 1949, when Selznick (1949) carried out an investigation on the Tennessee Valley Authority and reported that when faced with strong opposition, the firm would include some of those representatives on their board thus exercising some level of control. This was the first example when firms started to attempt reducing their dependency and taking advantage of an environment in which it operates.

Taking into account this perspective, boards of directors can be viewed as the body working to provide essential resources and to reduce firms' dependence on certain types of resources by bringing knowledge, relevant information, etc. which results in adding power to a firm as well as reducing transaction costs at the same time (Bryant and Davis, 2012). In this case directors can be described as being a link between the firm and the external environment (Hillman et al., 2000). It is also believed that the structure of boards of directors itself is heavily influenced by the firms' external resource dependencies (Bryant and Davis, 2012). For example, Pfeffer (1972) has found that firms with greater resource dependencies will create a board of directors consisting of a larger number of outside directors. Therefore, it can be seen how this theory is related to corporate governance and in particular to the composition of the board.

As any other theory, it is always subject to certain criticism. The theory does not explore what strategies firms will adopt to manage constraints when acquiring resources and whether the use of these strategies varies over time; it also fails to recognise other environmental factors which affect firms (Pfeffer and Salancik, 1978).

Our research, however, won't be considering the external strategy of firms, what we are interested to see is how remuneration is linked to performance and monitoring itself. In this sense, this theory cannot be applied to our research questions.

2.3 Managing the Agency Problem

It is difficult to achieve goal congruence and convergence of interests between shareholders and directors. However, some scholars outline an assumption that if a problem is managed, i.e. the goal congruence is achieved at least to some extent it is likely that firms will operate more efficiently and firms will improve their financial performance (Filatotchev and Allcock, 2010).

Following Crawford et al. (1995, p. 231) "…the conflicts of interest that emerge between CEOs and the shareholders they represent are a classical example of the principal-agent problem". It is believed that there are two possible solutions to the agency problem and these are monitoring of directors and incentives (creating remuneration contracts in a way that it motivates directors to act in the interests of a firm), which can act either as substitutes or as compliments (Rutherford et al.,2007).

One of the two solutions to the agency problem advocated by Rutherford et al.(2007) is to enhance executive directors' monitoring in a firm, i.e. this will attempt to reduce the information asymmetry and influence managers to put investors' interest above their own and thus greater alliance will be created. It was proposed by Holmstrom (1979, p. 74) that "a

natural remedy to the problem is to invest resources into monitoring of actions and use this information in the contract". However, in some simple situations all the necessary information is available thus making it easier to monitor meaning it will create a perfect solution for the agency problem, whereas in most cases complete monitoring is not possible or very costly due to expenses involved in gathering all the necessary information. In such cases where direct observation is neither possible or easy, imperfect monitoring comes into place and principals have to control agents using different forms of accounting, supervision, etc., i.e. means used to identify managerial effort (Holmstrom, 1979). Therefore it can be said that in order for principals to achieve goal congruence they have to look for efficient mechanisms to reduce information asymmetry.

Moreover, it is also possible to reduce agency problem and align interests between parties by increasing the level of formalisation. The degree of formalisation includes the set of written rules within a firm thus reducing managerial opportunism to pursue their own interests (Rutherford et al., 2007). Miller (1987) confirms this point by conducting a survey including 97 small and medium-sized firms and finding that there is a relationship between formalisation and the level of interaction between decision makers. A study shows that structural formalisation can be described to be a very valuable tool indicating that more attention should be drawn to it in companies.

Michael and Pearce (2004) even refer to formalisation as a third solution to the agency problem, describing it to serve as constraints. Researchers outline in their paper that incentives and monitoring being standard mechanisms for the agency problem solving are subject to duration; i.e. long-term decisions needs other mechanism to control them. Therefore, constraints such as written policies can have a great effect and make managers adhere to the set rules within a firm thus limiting the agency problem and making other tools even more effective if they are applied together.

Shareholders monitor the behavior of directors in both, direct and indirect ways. Direct monitoring is usually undertaken in the form of equal voting, cumulative voting, and confidential voting. Other forms of direct monitoring include private and public disclosure through which directors communicate the firm's performance to the outsiders (Healy and Palepu, 2001). Private disclosures take the form of private face-to-face conversations between the directors and the investee firm (Arnold and Moizer, 1984) but such meetings can be manipulated by directors because of asymmetric information (Holland, 1998a, b; Solomon et al., 2013). Indirect monitoring is directly observable but can be gauged by the level of directors' independence (Lippert and Moore, 1995).

Clarke and Conyon (1998), for example, contend that in order to align diverging interests of the two parties, directors of firms should be offered explicit incentives, which is a second tool to control the agency problem. This usually takes the form of compensation contract also referred to as optimal contract (Healy and Palepu, 2001). The terms in compensation contracts can explicitly state the manner that the agent can perform his/her duties. This will facilitate an alignment of the interests of the agent and the principal and can be done via two mechanisms: financial alignment and alignment of actions (Nyberg et al., 2010). Even so, these arrangements are affected by the level moral hazard and adverse selection.

Compensation contracts are also seen to be more effective in case where institutional investors hold shares in a large number of firms, unable to effectively monitor the behaviour of managers thus contracts act as a bonding mechanism to align interests between directors and investors and reduce agency problem (David et al., 1998).

Thus the creation of suitable compensation contracts can help reduce the agency problem (Lippert and Moore, 1995). However, compensation contracts cannot cover all eventualities and indeed they do not give the agent a free hand to do as he/she wishes. This is quite evident in nature of the decisions that are voted on during shareholder's meetings. One

useful mechanism for aligning the interest of the principal and the agent is to also make the agent shareholders of the firm.

In the following sections I am going to look at these two mechanisms for controlling the agency problem in more detail, providing some empirical examples.

2.4 Public and Private Information to Increase Monitoring

As it was discussed information is needed to monitor managerial behavior. The nature and quality of information should be taken into account as it will have different relevance; the board has to acquire proactive information thus it will have a greater impact on the decision-making process. Proactive information includes not only data provided by managers but also additional information which could not have been misinterpreted by managers who might have pursued their own interests; therefore, having an access to such information may result in reducing information asymmetry (Rutherford et al., 2007).

Corporate disclosure is of great importance for shareholders as well as for outside investors as it serves as a mean to gather information about firm performance and “is critical for the functioning of an efficient capital market” (Healy and Palepu, 2001, p.406). Having acquired all the necessary information the level of monitoring may be improved and thus agency problem can be reduced to a certain extent (Rutherford et al., 2007).

Disclosure can be either public (provided financial reports, statements, and other analyses) or private (voluntary communication with the firm’s management) (Healy and Palepu, 2001). The quality of disclosure impacts on remuneration levels as executives can over-state their performance levels and it may be difficult for the principal to verify their level of performance.

2.4.1 Mandatory Disclosure

Mandatory disclosure which has been introduced in many firms has decreased the problem of information asymmetry. However, increase in assets such as knowledge and innovation on which it is hard to place a corporate value has made it difficult to disclose the value of such intangibles in financial annual reports (Holland, 1998a).

Public financial reports are usually used for the purpose of creating true business information about a firm affecting the share price which should reflect the reality of market conditions in which firms operate rather than being driven by perception (Holland, 1998a). Many firms seek to broaden the disclosure content by releasing private information and improving communications with financial institutions. This can be done via formal and informal way. The former includes releasing some private information and explaining in greater detail some parameters included in public reports such as debt and dividend policy, gearing, etc.; the latter involves collecting qualitative information concerning different variables, such as environment for innovation, human intangible assets, and quality of management. This information is believed to help evaluating corporate performance in a better way (Holland, 1998a).

2.4.2 Private Disclosure

Various studies (e.g. Arnold and Moizer (1984); Chugh and Meador (1984); Diamond (1985)) have explored the importance of private disclosure by firms being in particular relevant for financial institutions which constitute a large part of shareholders (Holland, 1998a). The main aim of voluntary disclosure is to encourage a dialogue between shareholders and managers. Many researchers (e.g. Chugh and Meador, 1984) outline in their study that one-to-one meetings and interactions with management improve understanding of the firm value thus leading to better allocation of resources. Rutherford et al. (2007) support this argument in

their paper confirming that frequent meetings of shareholders with the board of directors tend to enhance monitoring, decreasing information asymmetry and thus help to solve the agency problem to a degree. In this scenario agents are less likely to act in an opportunistic way and remunerate themselves with exorbitant pay packages.

2.5 Directors' Remuneration

Directors' compensation has been defined as "…money provided by the members of a company to remunerate the agents elected by the owners of the company, to provide safe and profitable stewardship over the assets of the principals" (Gilshan, 2009, p.6). Directors' remuneration consists of different elements of rewards such as base salary, bonus, stock options, restricted share plans, accrued pension and benefits (Samuels and Piper, 1998). Remuneration package may also largely depend on the level of growth of the firm. For example compensation pack for managers of high growth firms usually consists of long-term incentives, such as stock option grants, performance awards, etc. However, directors of non-growth firms tend to receive payment in the form of a fixed (base) salary (Gaver and Gaver, 1995). Pay packages also change over time depending on firm performance and strategy directors choose; usually every year contracts can be renegotiated and adjusted to reflect changes in the firm (Dow and Raposo, 2005).

Many academic studies (see e.g. Tosi et al., 2000; Core et al., 1999) put a great emphasis on this aspect of corporate governance, exploring in a greater detail what factors (especially those which measure firm value and financial performance) affect remuneration, how these rewards differ between industries, etc. That is why there is a large scope for investigation as many aspects have an effect on the level of compensation.

Since 1980's the level of director's remuneration has increased dramatically and this question has attracted a lot of attention. For example compensation of US chief executives increased by 6.1% from 1991 to 1992 (Lippert and Moore, 1995). These huge remuneration packs CEOs received at the end of last century from stock options has generated a lot of concern of interested parties, especially national governments, regulators, investors and pension funds (Barkema and Gomez-Mejia, 1998; Muckley, 1984).

Unrepresentative levels of compensation automatically give rise to a conflict of interest increasing the agency problem. High remuneration packages are also criticised from moral and social perspective as the income gap between top directors and lowest paid workers in firms continues to rise (Rost and Weibel, 2013). Economists would always criticise an unfair distribution of income as it leads to many social problems.

Without an effective mechanism for corporate governance and board control, it is also the case that entrenched directors can influence their own compensation package (Fahlenbrach, 2009). As a result many countries sought to establish appropriate mechanisms to determine the compensation plans of executives in line with good principles of corporate governance (Thompson, 2005).

2.5.1 Remuneration and Current Economic Environment

Director's remuneration is a very important issue especially if we take into account current business environment. Firms which were affected by recent financial crisis were forced to cut salaries for many employees and also change executives' compensation packages in response to economic downturn. Since the way directors are remunerated became monitored in more detail; the level of compensation has changed for nonexecutive directors as well (Tovar et al., 2009).

Even if director's base pay decreased during the financial crisis, there is a suggestion that the total level of compensation continues to rise (and that can be attributed mainly to bonuses and other benefits directors keep receiving). For example, Tovar et al. (2009, p.1) indicates that "…overall total remuneration for directors increased in the most recent year, although at a much lower rate than in the preceding years".

Earlier mentioned concerns in relation to *"high"* directors' payments must also not be avoided. Too much emphasis was put on the actual managerial compensation. However, it is believed that we have to shift our attention to the way directors are being compensated rather that looking at an absolute value. As public awareness and pressure caused firms to cut down directors' salaries that led to decrease in rewards for outstanding performance for some of them. This has artificially decreased competition among managers, i.e. better rewarded talented managers would have replaced weaker directors in the future thus causing greater increase in efficiency of the firm (Jensen and Murphy, 1990b).

2.5.2 Remuneration Contract Used as a Mean to Align Interests

Many academic studies also focus on the debate as to whether the design of directors' remuneration contracts aligns the interests of shareholders and managers thus reducing the conflict or whether they might enhance the problem, meaning that directors unduly influence their compensation contracts benefiting only themselves (Fahlenbrach, 2009). That is the debate on which we are going to concentrate in this section of the review. There is a belief that if these contracts are designed in an effective way, it is likely that the agency problem will be mitigated to a certain extent (Crawford et al., 1995, Rutherford et al., 2007). This argument can also be supported by views advocated by Fama and Jensen (1983) and Jensen and Meckling (1976) who believe that incentives are helping to align interests between principals

and agents. The following section evaluates both of these possible scenarios drawing on some empirical investigations.

However, there is also a contrasting view which states that remuneration not only does not resolve the agency problem, but actually increases the agency costs (Blanchard et al., 1994).

2.5.3 Compensation Policy

What are the mechanisms to control directors' compensation packages? This section will describe what factors firms consider when designing an effective remuneration contract for executive directors.

This alignment between managers' performance and agents' interests described earlier and known as "bonding" also believed to be dependent on the availability of investment opportunities for the firm (Lippert and Moore, 1995). This point can be supported by the following conclusion "firms with abundant investment opportunities pay higher levels of total compensation to their executives" (Gaver and Gaver, 1995, p.20).As firms have an option of investment opportunities and thus a high potential to grow greater information asymmetry tends to exist between shareholders and managers leading a firm creating compensation packs with a greater emphasis on long-term incentives rather than fixed salary for the purpose of reducing agency costs (Gaver and Gaver, 1995).

Gaver and Gaver (1995) indicate that firms that have large investment opportunities are more likely to pay higher levels of compensation to their directors. The lower the profit of the firm, the greater the risk borne by directors who hold all their wealth in the firm and therefore are unable to diversify their wealth like shareholders. Similarly, since less profitable firms are more risky, directors will demand relatively more compensation to work for relatively more risky firms. This leads to involvement of high level of inside information and specialised

knowledge to which shareholders do not have access to thus making it difficult to monitor directors' behavior and approve projects. In order to align their interests shareholders choose to rely on a high proportion of incentive contracts in a remuneration pack meaning that managers will act in their interest and will attempt to explore new opportunities and choose most profitable projects for the future (Gaver and Gaver, 1995).

Jensen and Murphy (1990a) suggest that an effective way to control directors' actions and the level of their compensation is to link their rewards to shareholders wealth. Once a suitable contract is designed containing payments related to the firm performance the conflict is believed to be reduced to a certain extent. Using pay-performance sensitivity measures, i.e. the dollar change in the CEO wealth associated with a dollar change in shareholders' wealth is widely discussed in academic literature. Crawford et al. (1995), Jensen and Meckling (1976) and Jensen and Murphy (1990a) find that the higher the pay-performance sensitivity measure, the more aligned the interests of managers and shareholders are. Later the study by Conyon and Peck (1998) also add to prior analyses by finding a strong relationship between directors' pay and firm performance.

This does not imply that the agency problem is necessarily resolved over the entire period of the evaluation. The effectiveness largely depends on the ability of managers to make go sub-optimal activities before such activities are revealed. A fundamental weakness of this framework is that it makes no allowance for short-termism in the actions of directors before the disclosure of performance.

Being a highly debatable topic, contrasting evidence that firm performance is linked to remuneration also exists in academia. Some researchers found this relation to be weak or even insignificant in some cases (e.g. Jensen and Murphy, 1990a and Kerr and Bettis, 1987). Taking into account compensation and performance alignment in some of the US corporations, we do not observe similar results, i.e. pay-performance relation tends to

decrease. This trend is observed by some researchers since 1930s and they give an explanation based on two main reasons: public complaint with regard to high managers' payment which they consider to be too high and political forces which are believed to put certain legal constraints on the way compensation contract between managers and shareholders is designed thus limiting high compensation for outstanding managerial performance (Jensen and Murphy, 1990a).

Fama (1980) also stated that in certain firms the relationship between compensation and firm performance is not observable and the extent of the agency problem is so large that in some cases compensation fails to be a mechanism to control managers. In contrast to previous studies (e.g. Jensen and Meckling, 1976; Fama and Jensen, 1983), Kerr and Bettis (1987) measured firm performance in terms of returns to shareholders adjusted for the market movements. The rationale behind choosing this indicator was that this variable will clearly show contribution to shareholder's wealth which should be aimed to be maximised by directors. Researchers have investigated pay-performance relationship in 500 firms. Their results oppose earlier investigations which found a strong relationship between CEO compensation and firm performance; this analysis in turn shows that remuneration tends to increase regardless of firm's performance.

However, more recent studies found stronger evidence to support the view that compensation is sensitive to firm performance. For example, Matolcsy and Wright (2010) report that firms where CEO remuneration structure is linked to firm performance tend to be more profitable.

Moreover, some studies also highlight the link between market value and remuneration. Gabaix and Landier (2008) propose that increasing compensation is more to do with increase in firm value rather than the agency issues. Not that many studies have investigated this link; therefore, this indicates that this area requires closer examination.

Previous studies mainly investigated only CEO compensation levels in relation to firm performance. Zalewska (2014), however, highlights that not much attention was paid to remuneration at board levels, i.e. other executives' pay. As this measure was avoided in previous studies, we are going to draw our attention to it and include remuneration for all executive directors' to check for relation between firm performance and compensation.

2.6 Relationship between Monitoring and Remuneration

Now we are going to shift our attention to corporate governance mechanisms and review literature which looks at association between monitoring (board control) and remuneration. Academic studies (see Lippert and Moore, 1995; Rutherford et al., 2007; Tosi et al., 1997; Dalton et al., 1998) looked at the relationship between monitoring and incentives and tried to investigate whether these act as substitutes or complements.

A study by Zajac and Westphal (1994) conducted a survey including 400 large corporations in the US and they found a negative correlation between remuneration and monitoring, i.e. concluding that these two mechanisms for reducing the agency problem act as substitutes. However, more studies confirm that these are more likely to have complementary effects. Tosi et al. (1997) in their study find positive relationship between these two factors, explaining it by a number of reasons: for example all information could be subject to a certain degree of uncertainty; therefore just applying monitoring may not be enough; it may also be the case that if managerial compensation is related to firm performance (i.e. indicators which have a great importance for shareholders), agents may interfere with methods of showing information to principals in order to favour themselves. These points prove that even if both of these methods are considered to be effective there are still certain limitations meaning that if two mechanisms are applied together, the effect will be more powerful.

Rutherford et al. (2007) also examined the relationship between two proposed solutions, monitoring and incentive contracts. However, researchers shifted their attention slightly and concentrated in more detail on how information is being gathered, i.e. information collection behavior was placed in the centre of this study. The strength of this research is that survey was conducted among three different industries as various environments should be taken into account due to the fact that depending on the industry within which a firm is operating the governance mechanisms could be applied in a different way. This study confirmed prior research by Tosi et al. (1997)and concluded that information and incentives act as compliments rather than substitutes (Rutherford et al., 2007).

However, even though monitoring and incentives are described as being two main solutions to the agency problem due to the fact that governance relations turn out to be complicated in practice and are often described as being ambiguous making boards and CEOs work in an uncertain environment thus it should be noted that monitoring and incentives cannot be sufficient when applied on their own (Rutherford et al., 2007).

The key to improve monitoring and corporate governance is to have independent boards of directors (Guthrie et al., 2012), implying that excessive compensation will be controlled. Recommendations for that are usually provided in Codes of Good practice which we will discuss later in this chapter.

It is also supported by an argument that if CEOs exert more power than the board, it becomes more difficult to monitor remuneration and contracts become less optimal (Ryan and Wiggins, 2004). Therefore, corporate governance variables which characterise board control will have an effect on remuneration.

Coles et al. (2001) highlight in their study that despite the fact that many academics investigated the relationship between board control and remuneration, most studies

examined one or two variables at a time; however, firms may use different mechanisms to control managerial behaviour and meaning that some variables may be effective for one firm and help them creating an effective environment whereas other firms will rely on other mechanisms to determine their structure of the firm. Therefore, more attention in academia should be drawn to incorporating as many corporate governance variables as possible when testing this relation.

2.7 Other Factors Affecting the Monitoring of the Agency Problem

2.7.1 Ownership structure

The strength of directors' monitoring largely depends on the ownership structure of the firm and thus it has an influence on the CEOs compensation (Barkema and Gomez-Mejia, 1998; Davis et al., 1998).

The concentration of ownership tends to increase, i.e. the amount of large shareholders increases. In the study by Shleifer and Vishny (1986) it was mentioned that in a survey of the Fortune 500 firms, 354 firms out of 456 had shareholders owning 5% of the firm or more.

Nowadays, it is more often the case that firms are owned by institutions. The "traditional" structure of owners in firms continues to change as there are less individual shareholders and more often firms are owned by large institutional block holders (Daily et al., 2003).Banks, pension funds, mutual funds, insurance companies, etc. are organizations which refer to institutional investors and their ownership increases dramatically. One of their duties as being owners of the firm and representing shareholders' interests is taking an active part in governing the firm and thus controlling managers which make important decisions on their behalf. Even if a single institution owns a small amount of shares, the mutual power exercised on managers by all institutions together has a greater effect. With the absence of this power,

managers are likely to take advantage of that and therefore influence their level of compensation (David et al., 1998).In extreme cases directors might even lose their positions within a firm. It has been reported as institutional investors tend to intervene, there were cases when some CEO's were removed as it was believed that they did not act in the best interests of the firm (Kahn and Winton, 1998).

Shleifer and Vishny (1986), however, outline that if a firm owned by a large number of small shareholders, a firm may not pay each of them for the purpose of monitoring managers. It is often the case that large shareholders will be interested to monitor management as they gain greater benefits from it. That is, small shareholders do not have a big enough stake in the firm to absorb the costs of watching the management" (Shleifer and Vishny, 1986 p. 462). This implies that large shareholders improve their own welfare as they have an interest to maximise their own wealth and thus have an incentive to monitor managers increasing the value of the firm at the same time thus benefiting all shareholders as a whole. However, it also might be the case that large shareholders oppress smaller one by pursuing objectives which are only beneficial for themselves (Miller and Sardais, 2011).

David et al. (1998) also examined the relationship between institutional investors and managers' compensation. The results indicate that institutional shareholders have an effect on remuneration; however, the extent of it depends on what kind of relationship exists between shareholders and a firm. Researchers distinguish institutional investors between being "pressure-resistant" and "pressure-sensitive", concluding that "pressure-resistant" shareholders do not fully rely on investing in a particular firm for their business thus they have more power to make the level of compensation more appropriate, whereas more "pressure-sensitive" investors who completely depend on the firm they choose to invest in may be threatened by managers' statements to terminate business with them; therefore, these owners will vote for higher CEOs compensation packs in terms of base salary. A study

carried out by Brickley et al. (1988) also reports that institutions such as banks, insurance companies and trusts which largely depend on firms they invest in are more likely to oppose managers than mutual or pension funds which are less dependent. Not much differentiation was reported in relation to long-term incentives which depend on the firm performance (David et al., 1998). This study was beneficial in terms of extending research on institutional investors as many previous studies concentrated on size of the owners in their research, whereas David et al. (1998) shifted their attention to the nature of this relationship, proving that it has a great importance.

As Jensen and Meckling (1976) suggest, if the number of directors who own shares increases, that should lead to greater convergence of interests. That implies that directors should exert greater monitoring if they are owners of the firm and set compensation levels which are not excessive.

2.7.2 Investors' protection

The legal system within which the principal and agent operate also provides framework to monitor and control the agency problem. Following La Porta et al. (2000), the law system provides an effective means by which the agency problem can be managed and also the way corporate governance is structured. The threat of legal action by the principal is very important as it may have an effect on choices managers make, i.e. projects they choose to invest in on behalf of the firm they work for. The reason for that apart from taking into account potential growth of the firm, investors also consider corporate risk and return when they make a decision (Giannetti and Simonov, 2006). Investors will always be willing to invest somewhere where their rights are protected by law as they want to ensure that their investment will return to them in form of an interest or dividends rather than being expropriated (see La Porta et al., 2002).

Another important point which must be taken into account is the concentration of ownership, issue which is debated a lot by researchers. Some studies (La Porta et al., 1998; La Porta et al., 1999) show that in both developed and developing countries there is a large concentration of ownership and analyse how shareholders may exercise their power and control. La Porta et al. (1999) study ownership structure in 27 richest economies in the world demonstrates very interesting results. Researchers detect the principal agent problem; however, not in its simplest form but they observe that in these firms it is very often the case that controlling shareholders manage the firm thus expropriating minority shareholders. La Porta et al. (1999) also state that the concentration of ownership emerges in a situation where the minority of shareholders is not legally protected, implying that the agency problem in this context can be resolved by improving the legal environment within which the firm functions, that can take the form of voting power, quality of accounting systems, level of corruption, etc. Taking into account this study and previous arguments which suggest potential solutions to the agency problem, it can be said that it is often the case that a combination of remedies should be applied in order to solve the problem.

Brenner and Schwalbach's (2009) also showed that the legal environment is of great importance. Thus as rule of law becomes stronger, the total level compensation decreases. This implies that firms operating in countries where investors have higher protection and legal rights are likely to set lower compensation levels.

Both the origins of the legal system and variation in the legal system across countries can lead to differences in the degree of protection available to investors. Indeed La Porta et al. (1998) findings based on 49 countries show that countries with common-law (e.g. England and British colonies) have the strongest protection of shareholders, whereas civil-law countries (e.g. Spain, France) have the weakest. Lower ownership concentration is also associated with good quality investor's protection (La Porta et al., 1998). This argument can

also be extended further and it is also important to consider the cultural framework of the country which influences the formulation of the social norms not only the legal system on its own. For example Bae et al. (2012) argue that nation's culture plays an important role in formulating principal-agent relationship, information asymmetry and agency costs.

Overall it can be said that it is essential to increase the efficiency of corporate governance controls as well as the legal system of the country to improve the performance of companies. This point can be supported by Parisi et al, (2009, p. 5) argument, which states that "good corporate governance and a good institutional framework are essential to creating value for firms in a sustainable manner".

Based on the argument that legal environment is important and also on the fact that when previous empirical research looked at the relationship between financial performance, corporate governance control mechanisms, they have taken into account one particular country and usually these were UK and US. We intend to carry out a study to see how firm performance and board control have different effects on remuneration in countries which have completely different legal arrangements and cultural background. For that purpose we have selected UK and Spain. Methodology chapter will cover in more details reasons for this selection.

2.7.3 Payout to Shareholders

Many researchers (e.g. Kerr and Bettis, 1987) suggest that one of the main objectives of the firm is shareholders' wealth maximisation, i.e. directors have to make the right choices which will bring more money for its owners (Jones and Felps, 2013). Shareholders' wealth can be maximised by increases in dividend payout and/or increases in the share price (Jensen, 1986).

Thus many managers choose an option to pay out high dividends in order to minimise the potential conflict between them and investors; some also believe that if dividends are high that causes share prices of firms to increase (Easterbrook, 1984).

If the amount of cash payments to shareholders is relatively large, it may be the case that the firm will have to obtain more capital outside the firm which is likely to be available at very high prices (Jensen, 1986). It is often the case that shareholders receive the payment in the form of dividends; and payout and acquirement of new capital happen at the same time commonly; therefore, once shareholders received cash, it is essential for managers to raise new capital (Easterbrook, 1984). That means these conflicts are often more severe in firms where large amounts of free cash flows are generated.

2.7.3.1 Dividends

Dividend payments are directly related to the agency problem as it demonstrates the relationship between insiders and outsiders. When the degree of conflict of interest is severe, shareholders would prefer to receive dividends rather than for the firm to retain the earnings for reinvestment purposes, which could potentially lead to misuse by managers (La Porta et al., 2000). Researchers identify two main models which relate to dividends and the legal protection of investors. The “outcome model” predicts that high dividend payouts are usually a result of good investors’ and creditors’ protection rights as they can use their power to extract cash(Byrne and O’Connor, 2012). High growth firms should have lower dividend payouts as they retain some earnings for future investment. It is also the case that successful firms do not pay substantial dividends as it is cheaper for them to access internal financing for future growth (Easterbrook, 1984). Easterbrook (1984) argues that investors would prefer lower dividends if there is an opportunity for the firm to grow, i.e. firms with lower dividend payouts tend to do better than other, meaning that high dividends could be a signal for

disinvesting firms. This point leads us to the explanation of the second model. The “substitute model” states that firms with weaker potential to grow tend to pay higher dividends in order to retain a reputation for fair treatment of minority shareholders (La Porta et al., 2000). These are two conflicting views on how dividend policies are designed in companies.

Easterbrook (1984) indicates that no matter what policy each firm chooses to adopt, its main aim should be an alignment of the interests of shareholders and managers.

2.7.3.2 Tax Issues

Some economists suggest that tax issues may have an impact on dividend payouts (Poterba and Summers, 1984).By investigating the relation between stock price movements and dividends payouts under different tax reforms in Britain the authors managed to find conclusive evidence that if dividends are taxed investors’ valuation of the firm decreases. However, many authors disagree with this statement and provide objective evidence. Auerbach (1979) demonstrates that taxes do not affect dividend payouts and the tax rate of dividends does not affect directly the cost of capital. La Porta et al. (2000) have also not found definite evidence on the importance of the taxation on paying out dividends. Differences in the tax profile of investors will affect their preference for dividend or capital growth (Easterbrook, 1984).

Having taken into account all important issues which affect the dividend payouts, it can be seen why in economic literature so much attention was drawn to identify the firms’ behaviour to choose the dividend policy they follow. The main point which should be considered is outlined by Easterbrook (1984) who argues that as long as investment policy and financing policy remains unaffected within a firm, it does not really matter what dividend policy is chosen as long as shareholders are satisfied.

2.8 Governance Mechanisms and Take-Overs

Another aspect which is worth mentioning is what happens if financial performance does not improve and governance mechanisms remain weak. Failure in the internal governance controls of firms can lead to the risk of take-over such that the target firm becomes better managed by a firm with better corporate control (Weir, 1997). What is implied here is that if a firm demonstrates poor performance, which might be enhanced by weak corporate control, investors will be looking to sell their shares and a firm is likely to be taken over. This, however, does not always work in such a way; the chance of being acquired depends on the following assumptions; if we assume that there is perfect information in the market, a high degree of liquidity allowing investors to diversify easily, absence of insider trading and low degree of ownership concentration then there is a greater chance for a firm being taken over (Krambia-Kapardis and Psaros, 2006).

If internal governance controls are ineffective and agency costs are high, the market for corporate control can be used as a monitoring mechanism. However, Fama (1980) argues that the market for corporate control should be used as a last resort because of the high costs of takeover battles. Although there are different types of governance mechanisms which could be used in order to enhance performance, it is argued that "...even in advanced market economies, there is a great deal of disagreements on how good or bad the existing governance mechanisms are" (Shleifer and Vishny, 1997, p.737).

Indeed, Weir's (1997) results show that poor performing firms are usually associated with weak governance structures. Thus to reduce the threat of take-overs, it is essential that firms improve their governance structures in order to improve performance.

2.9 Dynamic Setting

Issues regarding the relationship between firm performance, corporate governance and remuneration is mostly analysed in academia using static models. Doucouliagos et al. (2012a) highlight that if dynamics are ignored, findings on remuneration and performance can be considered to be understated. Edmans et al. (2012) also criticise static setting as if directors' compensation depends on single-period firm performance, then directors will focus on short-term achievements and that implies increasing current stock prices rather than concentrating on long-term firm value. It makes more sense to remunerate directors for their current performance in the future.

It is also important to capture dynamics as some components of directors' compensation may have an effect in longer-term (i.e. benefits) (Doucouliaos et al., 2007). Some previous studies, however, looked at lagged remuneration variables. For example Main et al. (1996) who construct a broader measure of executives' pay include lagged remuneration as their explanatory variable and justify this by stating that there are always lags in pay administration. These studies add some insights to academia in terms of exploring dynamic setting. However, this also clearly shows that there is a gap in the study in terms of investigating long-run relationship.

Therefore, we are going extend the static setting and also take our research to the next level by introducing dynamic context.

2.10 Corporate Governance and Codes of Best Practice

Up until now we were concentrating on empirical results and discussions regarding what factors will influence directors to make the right choices for the firm, the main one being setting the right level of remuneration which is often linked to firm performance and good

board monitoring. It can be seen that all these issues are quite complex and interlinked as good governance will improve monitoring and firm performance and firm performance in turn can influence the level of compensation which could be linked back again to board control. This makes corporate governance an extremely interesting discipline as this field of study incorporates different aspects of subjects such as economics, finance, law, management and politics (Rwegasira, 2000).

The question which will be discussed in this section is how firms can actually achieve good corporate governance mechanisms, what recommendations and guidance they can refer to. As nowadays the importance of corporate governance and concepts associated with it continues to increase, many countries attempted to regulate the way firms are monitored and how their performance is improved by providing their recommendations in the Codes of Best Practice.

2.10.1 Codes of Good Governance

A lot of developed countries have produced Codes of Corporate Governance where they provide a set of best practice recommendations for firms to be employed for the purpose of achieving better financial performance. Even though the first code of good corporate governance was issued in the USA in 1978 and then in Hong Kong in 1989, the issues of codes started to speed up after the published Cadbury Report in the UK in 1992 (Aguilera and Cuevo-Cazurra, 2009). Thus the UK is considered to be the leader in a production of such recommendations that is why the following section will concentrate on the development of the Code of Best Practice in the UK. These Anglo-Saxon principles (also known as Anglo-American model or market-based system, initially adopted in English speaking countries) served as an example for many other countries in the world. Some countries developed their codes relying on internationally-based system (sometimes referred to as bank-based system)

example of which served countries such as Germany and Japan (Krambia-Kapardis and Psaros, 2006). The main difference between these two models is that in a market-based system dispersed shareholders are the owners of the firm, whereas in an internationally-based system banks provide the largest source of finance (Rwegasira, 2000).

For many developing countries, for example, the introduction of the Codes of Best Practice is only considered to be effective if it is supported by other factors, such as low concentration of ownership, transparency, legislative support, etc., i.e. an environment in which recommendations can have a positive effect if the firm follows them (Krambia-Kapardis and Psaros, 2006). The main explanation as to why most of less developed countries took Anglo-Saxon model as an example (incorporating some differences) is that in order to develop successful legislation and become internationally competitive economies it is essential to accept model which incorporates common and worldwide accepted standards (Solomon et al., 2002).

There are a lot of different variations of corporate governance systems evolving around the world. It is often the case that these systems are very conflicting. Even though there are two main systems of corporate governance codes which have been identified earlier, the development of these practices will largely depend on the legal system of the country within which it operates its other economic, social and financial aspects (Rwegasira, 2000). It has been suggested by Solomon et al. (2002, p. 29) “the eventual outcome should be a global framework of CG rather than a collection of differing, competing and often conflicting systems”,i.e. countries should seek to harmonise systems around the world in order to increase benefits from these regulations. However, it is still far away from reality and even though the process of internationalisation takes place, corporate governance systems do not yet tend to converge (Aguilera and Jackson, 2003).

Corporate governance practices vary not only between developed and developing economies, but there are also a lot of variations among advanced economies. The proposed theoretical model which attempts to explain these differences suggests that corporate stakeholders and their interests determine these variations depending on institutions and social relations (Aguilera and Jackson, 2003). The authors have identified three key players (capital, labor and management) and determined factors affecting their interests. The main conclusion of this research paper confirms that the development of institutions, e.g. property rights, etc. play an important role as financial systems largely depend on it; researchers also explain that even though the process of internationalisation takes place, this may lead to certain convergence among institutions; however, this process could be overweighed by long-established national institutions and we may actually observe slow divergence. This paper is of great importance as it sheds some light on explanations as to why the expected convergence does not take place even though some countries transferred the already existing corporate governance model to their economy and the result was not the same. It also shows that there is a large scope for future investigation not only for financial and economic researchers but also for social academics as there are a lot of different aspects affecting the behaviour of stakeholders.

The same view was confirmed by McCarthy and Puffer (2008) who also extend their conclusion by explaining that it is extremely difficult to achieve such convergence as moral values and norms differ among countries and therefore norms of the agency theory may not fall within ethics of other countries meaning that relationship between say board and shareholders in some countries may be considered to be unethical in other economies as these are countries with market-orientated standards.

This provides another reason for our selection of two different countries. Having completely different culture, background which formed the legal system and the way Codes of Practice

were designed, it would be interesting to see how that will affect remuneration, monitoring and financial performance.

2.10.2 Remuneration Committees

Remuneration (also known as compensation) committees play an extremely important role in the governance of large corporations; the main objective of such committees is to propose the appropriate level and mix of managers' compensation packs which have to be approved by the board. The committee has to include a certain number of independent directors (depending on rules and practices adopted within a particular firm and country) in order to make sure that suggested level of compensation is not biased and inside directors could not have influenced that decision for their own benefit (Barkema and Gomez-Mejia, 1998). The agency theory which promotes the separation of ownership and control (Fama and Jensen, 1983) supports an idea of establishing compensation committees.

It has been discussed earlier that the nature of the relationship between investors and managers may have an effect on the level of compensation. However, a study by Daily et al. (1998, p. 209) provides a more detailed confirmation, stating that "it may be the nature of the compensation committee, not the board as a whole, that is an issue". The researchers suggest the same results as in the study by David et al. (1998); however, they relate the level of compensation to the composition of remuneration committee only, concluding that more favorable pay packages will be proposed if committee members are somehow dependent on the managers, i.e. rely on the firm performance themselves, etc. High levels of remuneration which may not be appropriate may attract attention from outside; however, as compensation pack consists of many different elements, the committee may still create a contract in such a way that less attention will be drawn (Barkema and Gomez-Mejia, 1998).

The results described in this section support earlier findings which suggest that pay-performance sensitivity is quite high. If we assume that this is always the case then it is possible to conclude that remuneration committees have a large power to resolve the agency problem at least to some extent as they have the ability to influence compensation. It is evident that solely relying on the remuneration committee to align diverged interests is not sufficient due to complication in relations between the board and managers. That is why we can conclude here once again that the combination of different mechanisms which were analysed earlier is of great importance.

The way in which remuneration committees are formed in firms are usually described in their Codes of Best Practice; therefore, as it has been stated earlier as UK is considered to be the pioneer in terms of producing governance guidance in the Cadbury Report, remuneration committees became very common in the UK (Barkema and Gomez-Mejia, 1998). Now I am going to shift the attention to the Code of Best Practice in the UK as it gives a brief picture as to how the development of governance took place which served as an example for many other countries.

It is also important to review other corporate governance variables analysed in previous studies which play an essential role in determining the monitoring and structure of boards of directors.

2.10.3 Audit Committees

Established audit committees are considered to be an important governance mechanism. It was highlighted by Arthur Levitt (the chairman of SEC) in his speech that “qualified, committed, independent, and tough-minded audit committees represent the most reliable guardians of the public interest” (Levitt, 1998). Recommendations regarding structure,

establishment and role of audit committees are provided in the Combined Code. Guidance on audit committee (FRC, 2012) recommends that main responsibilities of audit committees include the review of firm's internal financial controls; therefore, the effectiveness of the audit committee largely depends on the financial and accounting expertise of its members (Ionescu, 2014).

Some previous findings suggest that directors tend to manipulate earnings (and it is usually done via financial reports) with the primary intention of achieving higher incentive remuneration plans (Holthausen et al., 1995). It does not necessarily mean that these activities are illegal, usually it is done via different means (for example, how assets are being depreciated), meaning that these actions raise concerns regarding the ethics amongst accountants as managers clearly exploit the opportunities (Huang et al., 2008; Kaplan, 2001).

It is directly linked to corporate governance as effective internal controls, including an effective audit committee, tend to supervise managerial activities better (Dechow et al., 2010). This brings us back to the origin of the agency theory, which we discussed earlier in this chapter and to the problem of the separation of ownership and control. As it was previously discussed, greater monitoring tends to alleviate these problems and align interests of directors and shareholders. For example, Ionescu (2014) reports that having established audit committees, Spanish listed firms have become more effective; it was also reported that the number of times committee meets affects quality of financial information. He and Yang (2014) also provide evidence to support these arguments and report that effective audit committee has a positive effect on the quality of financial reporting.

Audit committee effectiveness is also related to audit fees and non-audit service fees. Zaman et al. (2011) outline in their study that effective audit committees will undertake more monitoring within the firm and this will results in higher audit fees (as they require more detailed auditing process). The effectiveness of audit committee can be measured using the

level of expertise of directors who sit on the board and compliance with provided recommendations. Therefore, in a better monitored firm we would expect audit fees to be higher.

Therefore, presence of audit committee is an important factor and this variable will be considered in our analysis.

2.10.4 Combined Roles of CEO and Chairman

Roles of CEO and Chairman and their importance are also highlighted in Combined Code. It is recommended that "the roles of chairman and chief executive should not be exercised by the same individual. The division of responsibilities between the chairman and chief executive should be clearly established, set out in writing and agreed by the board" (FRC, 2014, p.8).

CEO duality (i.e. role of the Chairman is exercised by the CEO) is believed to decrease the efficiency of the board and thus affect firm performance. The explanation for that is that roles are not separated between decision-management and decision-control (Fama and Jensen, 1983). This implies that the board is becoming less effective in monitoring (Iyengar and Zampelli, 2009). Many regulators and activists were influencing firms to have separate roles for the CEO and Chairman; however, previous findings provide mixed evidence regarding the relationship between CEO duality and firm performance (Yang and Zhao, 2014).

Having examined 141 US corporations over a period of 6 years, Rechner and Dalton (1991) report a positive association between separate titles and firm performance. Firm performance was measured using accounting returns in their study; however, shareholders' returns were not taken into account. Boyd (1995) outlines the importance of industry conditions affecting the relationship between CEO duality and firm performance.

Some studies have reported controversial results. For example Iyengar and Zampelli (2009) did not find significant impact of CEO duality on firm performance measured using Tobin's q and return on assets; provided justification for these results is that when firm appoint one person to perform both duties, they have other objectives apart from just improving performance. Another explanation for these findings is that CEO-chair is likely to have greater knowledge of the firm, its environment and the industry (Boyd, 1995). Phenomenal results are presented by Yang and Zhao (2014) who report positive effect of CEO duality on firm performance. These findings contradict many previous studies, but authors highlight that future work needs to be done to understand actual incentives of chairmen.

2.10.5 Composition of the Board, Independent and Non-Independent Non-Executive Directors

Since numerous combined codes of conduct and best practice were introduced, the structure of boards of directors and its composition attracted a lot of attention too as from the agency theory point of view board of directors are considered to act as an instrument of control of managerial behaviour (Stiles and Taylor, 2001).

One of the main provisions outlined in the Combined Code concerns composition of the board. It is recommended that "the board and its committees should have the appropriate balance of skills, experience, independence and knowledge of the company to enable them to discharge their respective duties and responsibilities effectively", (FRC, 2014, p. 10). Further supporting principles indicate that the board should include an appropriate combination of executive and independent non-executive directors so that each group of individual does not put pressure in terms of decision making. Westphal (1999) also highlights that good relationship between non-executive and executive directors can facilitate greater communication on the boardroom which will positively affect decision making process by

increasing advisory interactions. Non-executive directors may also have an incentive to maximise firm's value if they have developed ties with a particular firm as they have been serving on the board for some time.

Some studies (e.g. Hambrick and D'Aveni, 1992) outline the importance of having non-executive directors on the board, but the direct effect on firm performance is not examined. Hsu and Wu (2014) report interesting findings on the effect of the presence of "grey" directors on the board. They describe "grey" directors as being non-executive directors but who have personal and economic ties with the firm. This study reports that firms with a higher proportion of "grey" directors on the board in relation to executive directors and independent non-executive directors have lower probability to fail. Authors provide justification for these results and believe that corporate governance reforms might have overemphasized the important role of independent non-executive directors.

2.10.6 Female Directors on the Board

Combined Code does not provide any recommendations regarding gender diversity on the board. Number of women employed is continuously increasing and this consequently has an effect on the structure of board of directors; therefore, some studies have concentrated on investigating the relationship between number of female directors on the board and firm performance.

Despite the fact that proportion of women in workforce continues to increase in relation to white men, there is evidence to suggest that they are still largely underrepresented in executive positions (which may cause ethical implications) and there is also lack of research investigating the effect of number of female directors on the board in relation to male managers on firm performance (Dreher et al., 2011).

Campbell and Minguez-Vera (2008) have investigated the effect of gender diversity (i.e. proportion of female directors on the board) on firm performance in Spain and found that having more female directors on the board improves the quality of monitoring and thus has a positive effect on firm value (measured using Tobin's q). Perrault (2015) contribute to existing literature on gender diversity by providing arguments that having more female directors on the board will increase moral legitimacy and improve trustworthiness which can bring more economic gains for the firm.

Most findings regarding board diversity are relatively recent. Geiger and Marlin (2012) highlight, that little research has concentrated on gender diversity of the board in large corporations. Dreher et al. (2011) supports this view and stresses the importance of addressing this deficiency in the literature. Erhardt et al. (2003) also points out that a large number of studies investigating the link between gender diversity and firm performance take into account diversity in workforce rather than on the board level. Combining this evidence with the fact that previous findings reported positive association between number of female directors on the board and good financial performance, number of women on the board can be seen as one of the most important factors in corporate governance when considering board composition.

2.10.7 Board Meetings

One of the code provisions is that "the board should meet sufficiently regularly to discharge its duties effectively" (FRC, 2014, p. 7). Number of meetings boards hold during a year is directly linked to monitoring. It is essential for firms to review the effectiveness of boards and meetings are held in order to achieve this objective as quality of boards is an important factor for investors (Conger et al., 1998).

Vafeas (1999) presents interesting findings regarding number of board meetings being negatively related to firm value. It is suggested that number of meetings start to increasing following decline in the share price. However, following this increase there are usually improvements in firm performance being observed suggesting that greater monitoring has a positive effect on the firm.

Jensen (1993) offers an opposing view by suggesting that meeting themselves are not carried out in the most efficient way thus limiting opportunities for external directors to exercise any form of control. Jensen (1993) suggests that boards should be only active in the presence of problems when actions are required to resolve them; apart from that boards should be relatively inactive.

2.10.8 Director Ownership

Director ownership is also largely discussed in the literature. It is an important factor as some authors refer to it as a mean through which ownership and control can be combined to an extent. The idea behind it is that if directors hold stock ownership they are more likely to take more active part and increase management monitoring and control (Bhagat et al., 1999). Equity ownership should motivate directors to be more vigilant over company's resources and as their stakes increase managers are more likely to take of corporate wealth (Morck et al., 1988).

Previous studies have highlighted that complex relationships exist between director ownership, firm performance and directors' pay. Despite the fact that many studies have considered the effect of ownership in various scenarios, there is a limited research regarding direct analysis between director ownership and remuneration and that is one of the links which will be address in this thesis.

Many studies have focused on the relationship between director ownership and firm performance or firm value. Morck et al. (1988) analysed the relationship between managerial ownership and firm value (expressed as Tobin's Q). Their study reports quite interesting results and suggests that the nature of the relationship changes depending on the percentage of ownership. Authors report that if directors hold up to 5% equity the relationship between ownership and firm value is positive. However, if it is between 5% - 20%, this association becomes negative; above 20% it is positive again.

2.11 Code of Best Practice in the UK

Corporate governance started gaining greater worldwide importance in 1990's when many countries started developing recommendations for the best practice for their firms (Krambia-Kapardis and Psaros, 2006). Initial recommendations of good practice were provided in Cadbury Report, published in 1992 by Cadbury Committee in the UK, which became a pioneer in this field. The Committee itself was formed in May 1991 as a result of recognition of the need to improve performances of many companies. Therefore, the initial intention of the Committee was to meet the requirements of the users of firm reports which complained about the lack of effectiveness within companies. The Code was supposed to meet three main principles: openness, integrity and accountability; and provided recommendations in the report for firms to follow in order to achieve better performance (Cadbury Report, 1992).

Later on the Hampel Committee Report was produced in June 1998. After the publication of the Report firms were required to disclose information about how they employed the recommended principles and complied with them (Clarke and Conyon, 1998).

The Combined Code was published in 2008 by Financial Reporting Council and contains more recommendations. The aim of the Code is often described as the code of "best

practice", which provides statements for directors in order to improve accountability of the firm and control for the purpose of achieving high performance standards (Clarke and Conyon, 1998). The main principle highlighted in the Code is "comply or explain" standard, i.e. firms are expected to engage with recommendations; otherwise an explanation must be provided (Combined Code, 2008).

That is a brief history of development of the Code of Best Practice in the UK. Many countries followed the example of the UK and also produced their own Codes of Corporate Governance in which certain recommendations are provided, whereas some countries, for example the USA, have adopted more legal approach and have incorporated these practices into law with the Sarbanes-Oxley Act 2002 (Aguilera and Cuevo-Cazurra, 2009).

The role of boards has in particular been discussed more in the last few years. The financial crisis and a number of corporate scandals have indicated the importance of having an effective board of directors, especially the way it is monitored in order to improve the governance structure of firms (Zalewska, 2014).

Apart from being a leader in developing Combined Code, legal aspects of common law influence regulation and enforcement of recommendations. For example, as it is stated by Martin and Jones (2012), disclosures to shareholders, detailed scrutiny of boards of directors and control of contracts influence firms to promote effective corporate governance. This is also influenced by cultural background and UK firms can be considered to create more effective contracts linking remuneration to performance in comparison to other countries.

2.11.1 Combined Code and Remuneration

As UK is believed to be the pioneer in terms of Codes of "best practice", it will be briefly outlined what has been recommended in terms of remuneration in order to achieve better performance of the firm. Firstly, when Cadbury Report (1992) was produced it recommended that that remuneration committee should be appointed within a firm for the purpose of taking part in decision about directors' pay and it is also recommended that detailed information about executive's remuneration should be disclosed (Cadbury Report, 1992).

Later on these provided recommendations were assessed and improved and the current Combined Code of the UK states that "levels of remuneration should be sufficient to attract, retain and motivate directors of the quality required to run the company successfully, but a company should avoid paying more than is necessary for this purpose" (Combined Code, 2008, p.13). As there were developments in terms of recommendations for the best practice Hampel Committee Report contains more exact description how compensation levels can be set: "Remuneration levels are often set with help of comparisons with other companies, including remuneration surveys" (Hampel Report, 1998, p. 33).

This shows that firms have a choice to comply with provided recommendations which should increase board control and also align interests between shareholders and directors via a creation of an effective compensation package, which remuneration directors for their efforts but not overpay them at the same time.

2.12 Code of Practice in Spain

The development of Spanish corporate governance practices have also been affected by a number of recent financial scandals (Castresaoa, 2003). Following examples of other European Union countries which were also adopting strategies to improve their corporate governance (e.g. The Vienot Report in France, The Peters Report in Netherlands) as well as receiving requests from the professionals and the market, Spain also produced the Unified Corporate Governance Code to make its corporate governance more international in a globalised economic framework (Fernandez-Fernandez, 1999).

Corporate governance in Spain started to develop later than in the UK. In 1997 The National Commission of the Spanish Stock Exchange has requested a group of experts to develop a report to improve the governance of the firms. It became known as the “Olivencia report” and it provided recommendations for companies; it in particular concentrated on the role of independent non-executive directors and the vice president also acting as the code of ethics for companies (Lozano, 2000). Following the example of Cadbury report, the Olivencia report was not enforced by law, but only provided recommendations for companies to improve their governance. In 2003, the Aldama report was drawn up, which was similar to the Olivencia report in terms of its recommendations (Vives, 2000).

In May 2006, Spain has adopted its final Unified Corporate Governance Code, making it compulsory for listed firms (IBEX-35) to reference it in corporate governance section of their annual reports starting from year 2007 (Vives, 2007). It also follows “comply or explain” principle, similar approach as in the UK. Despite the fact that some authors have highlighted the importance of the Cadbury report in influencing Spanish corporate governance (Fernandez-Fernandez, 1999), Gutierrez and Surroca (2014) outline in their study that corporate governance practices in Spain are still relatively weak; the Anglo-Saxon practices

are not incorporated as much, in particular referring to information transparency, board independence and executive directors' variable remuneration packages. Garcia-Sanchez (2010) also emphasises the fact that corporate governance in Spain can be characterised by weaker control mechanisms in comparison to countries which originate from common law.

As we have previously discussed, the legal origin of countries also has an impact on how corporate governance develops and is enforced. Spain originates from civil law and has statute based legal system. It is stated by Nukada and Paredes (2015) that Spanish corporate governance is subject to soft rule. Similar to UK companies, firms have to provide explanation if they do not follow recommendations.

The main difference which can be captured between common and civil law countries is how rules are enforced. For example, La Porta et al. (1998) highlight that aspects such as quality of accounting systems, the level of corruption, the efficiency of the judicial systems will all have an impact on corporate governance. These tend to be weaker for civil law countries. Thus, it can be implied that it is easier for executives in civil law countries to capture an excessive power and extract higher levels of remuneration. However, before making such conclusions it is important to refer to empirical studies which will be done later in this chapter for each particular country as academia presents mixed evidence regarding relationship between remuneration, firm performance and corporate governance.

2.12.1 Unified Corporate Governance Code and Remuneration

Following examples of other countries, executive directors' also receive their remuneration through stocks and stock options in Spain (Castresaoa, 2003).

The Unified Code adopted in 2006 has addressed the aspect of remuneration. Attention has been drawn to transparency of remuneration; the code has specified that remuneration report should be submitted for consultation to the Shareholders' Meeting and individual level of remuneration should be included in an annual report too (Vives, 2007).

Remuneration levels for executive directors' should also be set at the right level, meaning that pay should motivate directors to create value for the firm and aligning interests of directors and shareholders in the long run (Mendez et al., 2011). The Unified Code on Good Corporate Governance in Spain recommends that "remuneration shall sufficiently compensate them for the commitment, qualifications and responsibility that the post entails, but should not be so high as to jeopardise their independence" (Unified Code, 2006, p. 21).

2.13 Review of the Empirical Studies

Previous sections of our literature review have generally concentrated on corporate governance issues and aspects, covering theoretical considerations and general practices. As our study mainly concentrates on two countries and aims to investigate links between firm performance, remuneration and corporate governance, it is also important to review previous findings in academia for UK and Spain in order to help to develop our hypotheses.

2.13.1 Empirical Studies for the UK

A large number of studies concentrated on the analysis of UK firms and interesting, often contradicting results are reported. First of all, we are going to concentrate on the relationship between remuneration and performance of firms. Some studies on large UK companies show strong positive link between directors' remuneration and firm performance. Conyon (1997) finds a positive association and also stresses the importance of the relative pay. The author also indicates that firm size plays an important role in shaping executives' pay. In contrast, Eichholts et al. (2008) find weak pay-performance association.

A comparative study between UK and Us was performed by Conyon and Murphy (2000). After controlling for size and sector, it was reported that CEOs in US receive 45% higher cash compensation and 190% higher total compensation than CEOs in the UK. The criticism of this study is that results are documented only for one year – 1997.

More recent study by Ozkan (2007a) analysed 414 large UK companies. The study looked at the relationship between compensation and corporate governance mechanisms. It was reported that larger board size and higher number of non-executive directors contributes to increases in pay, which suggests that non-executive directors are ineffective in monitoring contradicting suggestions in the Combined Code. Author also reported a negative association between ownership and remuneration.

Earlier papers (e.g. Conyon, 1997) also started devoting their attention to corporate governance practices and how these affect directors' pay. Conyon (1997) in his study reports that companies which introduced remuneration committees experienced lower rate of increase in top directors' remuneration. In contrast, a study on 220 large British companies by Main and Johnson (1993) reports that the presence of remuneration committees was

associated with higher levels of pay and remuneration does not act as an incentive for directors.

Thompson (2005) looked at impacts of corporate governance mechanisms in more detail. His study analysed the impact of corporate governance reforms themselves on the levels of remuneration and mixed evidence is also reported. The author reports that reforms have had a positive impact on executive tenure, but they were not as effective in terms of linking pay to performance.

The main criticism of earlier studies is that there is a lack of studies which look at dynamic context. Taking this into account one of the main contributions or our study will be that we won't only consider dynamic setting, but also will analyse the long-run relationship between remuneration and firm performance.

2.13.2 Empirical Studies for Spain

As we have earlier noted, the amount of published work on other European countries covering the topic of remuneration, firm performance and corporate governance is quite limited. However, there are a few studies which provide analysis for Spanish companies.

Similar to results reported for UK listed firms, Crespi-Cladera and Gispert (2003) report positive relationship between remuneration and performance. Authors also highlight that it is interesting to observe these results considering that Spanish companies' context differs from the "Anglo-Saxon" model. The criticism of this study, however, is that time period covers 1990-1995, meaning that these results might be slightly out of date and authors also state that missing data for these companies has led to a very small sample size (only 113). Another

similarity with findings for UK companies reported by Conyon (1997) is that Crespi-Cladera (2003) also report that size of the firm positively affects directors' pay.

A recent study by Lucas-Perez et al. (2015) investigates an interesting relationship between gender diversity, firm performance and remuneration. Authors reports that board diversity increases firm performance and it also affects functioning of the board by influencing a more effective design of incentive contracts. This study has a direct link with our research, but our study will investigate a direct link between governance mechanisms and levels of remuneration.

Mendez et al. (2011) report positive significant relationship between size of the board and remuneration. This can be explained by the fact that large boards cannot exercise the same level of control thus directors tend to have high levels of compensation. They also find contradicting results regarding the number of independent directors on the board. Their study confirms that increased number of independent directors does not seem to moderate the level of pay. Considering what has previously been discussed regarding Combined Codes and board controls we would have expected to find the opposite result. This can be probably be explained by the argument how board control is actually enforced in different countries.

This review indicates that taking into account all these findings, we can draw a conclusion that relationship between remuneration, firm performance and corporate governance is a complex phenomenon. Based on these earlier mixed results, it can be concluded that there is no definite evidence to suggest whether remuneration is considered to act more as an incentive for directors and align their interests with the ones expressed by shareholders or whether having high levels of pay will contribute towards more agency issues. Linking this back to our study, this reinforces the importance of investigating these relationships. Lack of previous studies on other European countries also highlights the need to draw our attention to this aspect. Our results will be unique as we will consider a certain time period and it will be

interesting to investigate what evidence we will find for our particular datasets in terms of links between remuneration, form performance and corporate governance for UK and Spanish firms.

2.14 Conclusion

We have highlighted main issues which are discussed in academia regarding corporate governance, firm performance and remuneration. All these issues are complex and are interlinked with each other as large number of empirical research suggests. Agency theory supports research in this area as it tries to find solutions for principal-agent problems caused by differences in interests. Having outlined the importance of Codes of Good practice, it can be seen that firms have recommendations which they can follow to achieve better performance via governance mechanisms and partly resolve their agency issues associated with directors and shareholders. However, even though clear recommendations are provided, the question still remains whether compensation packages are “excessive” or not and whether directors use firm’s resources for their own advantage. Therefore, this study will address this question by looking whether remuneration in firms is linked to financial performance and good governance mechanisms.

Most studies concentrated on the analysis of one country – and mostly the UK or US, we will look at two countries originating from different legal backgrounds – UK and Spain. Next chapter will provide more detail for this particular selection. Therefore, this thesis will provide a comparative study.

Despite a large number of studies in this area, most researchers looked at pay-performance relation concentrating on static single-period models only. We are also going to develop dynamic model to test this relationship.

Having identified what issues need to be addressed in this study, next chapter will look at methods selected also providing reasons for the chosen methodology.

Chapter 3 Methodology and Hypotheses Development

3.1 Introduction

This chapter describes methodology which will be applied in the empirical chapters to investigate the relation between executive directors' remuneration, financial performance and corporate governance variables for both UK and Spanish firms. We estimate both static and dynamic versions of the models using two different estimation methods – ordinary least squares regression (OLS) and generalised method of moments (GMM). Dynamic versions of the model are important since they accommodate variation is conditions that can affect the estimates. The GMM approach seeks to introduce consistency in the presence of heteroskedasticity. Finally, to capture long-run conditions, we estimate the model using panel cointegration and error-correction models.

We justify the choice of two countries which are examined and how the data was collected. This chapter also includes descriptive statistics for each variable used in the analysis and correlation estimates.

3.2 Research Questions

Our objectives have been outlined in the first chapter. Following on from the literature review, the thesis aims to answer the following research questions which are summarised as follows:

- What is the relationship between firm performance and total executive directors' remuneration?
- What is the association between market value and executive directors' compensation?

- How does the level of monitoring and board control affect directors' pay?
- What are the short- and long-term properties of the relations between executive remuneration and firm performance?

This chapter considers the data sets and the methodologies that will be applied to seek answers for the above research questions. We start by developing research hypotheses which will be examined in this study.

3.3 Hypotheses Development

The choice of our corporate governance and financial variables is determined using an appropriate extensive available literature in the field, helping us to develop a set of hypotheses and leading to an employment of certain independent variables for the models. This section provides a description of variables adopted in our empirical analysis – both dependent and independent.

Explanatory variables are selected according to hypotheses which are tested. Our first and second hypotheses are related to firm performance, market value and executive directors' compensation. This has a direct link with the agency problem. Remuneration is a complex phenomenon and some academics view it as an incentive to reduce the agency problem (Jensen and Murphy, 1990a). Linking remuneration to firm performance will help creating incentive contracts to motivate executives to increase firm value. This pay-performance relationship has been studied by various academics and positive relationship was reported (e.g. Conyon, 1997). Other, however, argue that if executives capture an excessive amount of power, it will increase the agency problem. For example, Blanchard et al. (1994) argue that remuneration increases the agency costs.

Our next two hypotheses view remuneration as an incentive. The main reason for that is that following changes in corporate governance after the financial crisis and greater monitoring regarding pay-performance contracts, we would expect remuneration to move in line with firm performance and firm value as most studies reports (e.g. Conyon, 1997; Ozkan, 2007a).

H_1: *A positive relationship between firm performance measures and executive directors' pay.*

Previous studies have incorporated different performance measures including return on capital employed, profit margins, etc. (Tosi et al., 2000; Daily et al., 2003).The choice of accounting ratios to express firm performance is mainly based on the explanation by Sloan (1993) who states that accounting measures are not affected by the fluctuations in the value of the firm when determining the level of remuneration meaning that they can be considered to protect executives from these market changes. The same methodology was followed by Zakaria (2012) who emphasised the importance of accounting measures when examining pay-performance relationship. All our financial variables are expressed as ratios. Some of these dependent variables (such as accounting ratios) are directly obtained from the database, whereas others are transformed given the financial information. We split our financial variables into the following broad categories for convenience when we will be analysing our estimated results: profitability, firm value, leverage, earnings and distribution and taxation cash flow.

- Profitability: gross profit margin (GPM), natural logarithm of earnings before interest and taxes (LNEBIT), operating profit margin (OPM), remuneration over net income (REMUNNETINC), return on assets (ROA), return on capital employed (ROCE), return on equity (ROE).

- Firm Value: net cash flow over market value (NCFMV), Tobin's Q (TOBINQ) a measure of market value over total assets.
- Leverage: total debt over market value (DEBTMV), liabilities over total assets (LIBASS), natural logarithm of short-term debt over long-term debt (LNSTDEBTLTDEBT), natural logarithm of total debt (LNTOTDEBT), long-term debt over market value (LTDEBTMV), long-term debt over total assets (LTDEBTTOTASS).
- Earnings and Distribution: dividend yield (DY), earnings per share (EPS).
- Taxation Cash Flow: natural logarithm of taxation cash flow (LNTAXCF).

H_2: *Market value of a firm is positively related to executives' remuneration.*

To measure market value we use natural logarithm of firm's market value (LNMV).

Our next hypothesis is linked to corporate governance measures. Having described recent changes in Codes of Practice, most firms tend to follow recommendations for best practice. Mixed evidence exists and some studies have reported that increased monitoring reduces the level of remuneration (Conyon, 1997) and that is attributed to the fact that directors are not able to pay themselves enormous salaries due to effective control. However, for example Ozkan (2007a) finds that increased number of non-executive directors is positively related to compensation. Despite the fact that mixed evidence exists, we postulate the following hypothesis based on the argument that greater monitoring will result in adopting lower pay for directors.

H_3: *Compensation is inversely related to levels of board monitoring.*

This hypothesis can be supported by the argument presented by Core et al. (1999) who states that CEOs with weaker governance tend to receive greater compensation. The selection of corporate governance variables is based on the academic literature which identifies variables which measure monitoring and board independence; most variables take the form of dummy variables as we measure whether certain aspects of corporate governance of firms are complied with Codes of Good Practice or not. The selection of variables is supported by previous empirical research (Coles et al., 2001) in which different corporate governance mechanisms (such as board and ownership structure) were tested at the same time.

- Audit committee compliance with recommendations (ACOMP). Dummy variable, which is one if the committee is complied with the Combined Code (2003) for UK firms and with the Unified Code for Spain. The Combined Code recommends at least three independent non-executive directors should serve on the audit committee board. The Unified Code outlines that the audit committee should consist of external directors only, the majority of which must be independent.
- Role of CEO and Chairman (CEOCHAIR). This information is described in "Board Structure" part of reports for both UK and Spanish companies. It is one if roles are separate, 0 – combined, i.e. both duties performed by one person.
- Compliance of the board of directors (COMP). Dummy variable, which takes the value of one if the board is compliant with regulations outlined in the Combined Code (2003) according to Manifest for UK companies. The board must consist of at least half of non-executive directors (excluding the Chairman), which are determined to be independent by the board. The composition of Spanish companies' boards have to be

consistent with the Unified Code, which recommends that after the AGM the number of independent directors should represent at least one third of all board members.

- Non-audit fees in relation to audit fees (FEES). This variable is expressed as a ratio and is also provided in Manifest corporate governance reports.
- Ratio of female directors on the board (FEMALE). This includes both executive and non-executive directors. Board diversity and total number of directors is provided in reports, therefore we obtain this ratio by dividing the number of female directors by the total number of directors on the board.
- Ratio of independent non-executive directors on the board (INDNEDS). Information is provided in "Board Overview" section of the report.
- Number of meetings per director each year (MEETING). Total number of board meeting held during the year divided by the total number of directors.
- Ratio of non-independent non-executive directors on the board (NONINEDS). Value is taken directly from reports.
- Remuneration committee compliance with recommendations (RCOMP). It is recommended in the Combined Code (2003) that committee should have at least three independent non-executive directors, however, the Chairman is allowed to be a member, but not to serve as a Chairman of the remuneration committee. For Spanish firms it is recommended that committee should have external directors with the majority being independent.
- Compliance of size of the board with recommendation (SIZE). This variable is available for Spanish firms only. As it is outlined in Manifest reports the size of the board after the AGM should comprise no fewer than 5 and no more than 15 members according to recommendations specified in the Unified Code for Spain. Therefore, one means that firms have between 5 and 15 members on their board, 0 – otherwise.

Once directors become owners, they have a greater interest in monitoring firm in a better, more efficient way thus making sure that remuneration is not excessive This association is a complex one, as for example considering findings by Morck et al. (1988) which report different relationship based on the level of ownership, it can be said that it is difficult to predict this association. Despite the mixed evidence in academic literature, bearing in mind recent corporate scandals we would expect owners (as their money is at stake) to vote for lower levels of remuneration. This can be supported by findings reported by Ozkan (2007a) who found a negative association between ownership and compensation for large UK firms.

H_4: *A negative association between directors' ownership and levels of compensation.*

We introduce the following variable to our models to test this relationship.

- Percentage of firm's shares owned by directors (DIROWN). Information is manually collected from Manifest reports (i.e. calculating total number of shares directors own) and then this number is divided by the total number of shares.

Next two hypotheses are linked to the dynamic setting. As it was argued by Doucouliagos et al. (2012a), current levels of remuneration are positively linked to lagged pay and lagged firm performance. There is no mixed evidence in academia to oppose this view. Considering the fact that hard work is more likely to be recognised in the next period and it takes time to adjust pay based on previous performance, we predict the following two hypotheses.

H_5: *A positive association between current executive directors' remuneration and lagged executive directors' pay.*

We have previously highlighted the importance of including lagged dependent variables as explanatory variables in our dynamic setting in the literature review (see Main et al., 1996) as it takes time for remuneration to adjust; therefore, we introduce two lags on the following variables: LNTOTREM, REMGP and REMMV. Doucouliagos et al. (2012a) used one lag, we introduce two in order to capture the effect if adjustment takes longer than one period.

H_6: *Lagged financial performance is positively related to current executive directors' compensation.*

To test this hypothesis we introduce lags on all financial variables: LNTOTASSETS, GPM, LNEBIT, OPM, REMUNNETINC, ROA, ROCE, ROE, DEBTMV, LNMV, LTDEBTMV, NCFMV, TOBINQ, LIBASS, LNSTDEBTLTDEBT, LNTOTDEBT, LTDEBTTOTASS, DY, EPS and LNTAXCF.

We include all variables in OLS and GMM regression models to test all predicted hypotheses. All explanatory variables are grouped into the following broad categories for convenience when results are analysed and presented in our empirical chapters: profitability, firm value, leverage, earnings and distribution, taxation cash flow, corporate governance and year effects. We will often be referring to these themes when discussing our estimated results.

Appendix A contains full description of financial and corporate governance variables used to test our models for both countries and their abbreviations to which we will be referring for simplicity reasons in this and next chapters.

3.3.1 The Dependent Variables

As all hypotheses are structured in a way to test the effect of different factors on total executive directors' level of remuneration, our dependent variables are going to be the same for all hypotheses. The empirical analysis is based on the measurement of total executive directors' compensation.

For our study total remuneration variable was collected for each firm and year if was available and disclosed in Manifest reports; and included the following components: basic pay, bonus, benefits in kind and pension, if reported, following similar method offer by Finkelstein and Hambrick (1989). In our study these components are jointly determined; however, it is important to note that salary and bonus play different roles in relation to the agency theory. In the previous study by Banker et al. (2013) where they have also jointly calculated remuneration components, it is discussed that if bonuses are paid out based on firm's performance, they tend to increase managerial effort and therefore help to solve the agency problem if present in the form of moral hazard and adverse selection. This implies that directors with better abilities will receive higher rewards and together with fixed salary will generate higher total pay as well. On the other hand, directors who perform better receive lower fixed pay in relation to total cash compensation they receive (Banker et al., 2013). Despite the fact that these two components have their own distinctive links with the agency theory, we are interested in examining the effect of total cash received by directors, following similar method used in previous studies (Gigliotti, 2013; Stroh et al., 1996; Finkelstein and Hambrick, 1989).

Total executive compensation was calculated for each company for each year for all executive directors on the board summing up all components. There is, however, no consistency as to how these data are presented. Some reports do not provide a breakdown of remuneration components but only include total remuneration received by each executive

director. This is mainly the case for Spanish listed companies. In order to be consistent, total compensation executive directors received was calculated and used in this study.

We use three dependent variables in our models based on total executive compensation value. Many empirical studies(such as Haynes et al., 2007; Ghosh and Sirmans, 2005) have expressed the total directors' pay as a natural logarithm therefore we adopt similar technique in our case and one of the dependent variables takes the form of natural logarithm of total remuneration (LNTOTREM). Using logarithmic transformation descales that data and to some extent reduce non-normality (Pathak et al., 2014; Banker et al., 2013).

Other two dependent variables used in our regressions are expressed as ratios: total remuneration over gross profit (REMGP) and total remuneration over market value (REMMV). Both of these variables show the proportion of total pay in relation to gross profit and market value respectively. The justification for using these ratios is that we capture relative pay rather which is as important as total pay. Total remuneration has been adjusted by gross profit and market value respectively.

3.4 Data Selection

As it is a quantitative research, our data collection only relies on the secondary panel data. The sample for this empirical research consists of a large number of firms operating in different industries in two countries, excluding banks and insurance firms because of the differences in corporate governance regimes.

The panel data was obtained from two databases: Manifest and Datastream. All publicly available financial key indicators of the firm were retrieved from the Datastream. Manifest is considered to be an extensive resource for corporate governance variables and contains all variables needed for our research. Corporate governance data collected from reports arethen

matched with other financial variables for each year to have a complete dataset for each country. We also include year effects in all our regressions.

One of the limitations using Manifest when collecting corporate governance data is that many Spanish firms have a few years of missing data as annual reports contain incomplete information, meaning there will be more missing observations for Spanish firms in our final dataset which will affect the number of observations in our final models. If there were some missing variables present for a certain year, the average was found for the financial variables.

Sample period is 2005-2011. There are two reasons for the choice of this particular sampling period. Most financial academic research papers when analysing this topic choose sampling period between 3-7 years and we follow the same examples (see e.g. Core et al., 1999; Perez-de-Toledo et al., 2013). The availability of Manifest reports also supports our selected time period as corporate governance reports are only available from year 2005 and onwards for Spain.

Our sampling period also covers the year 2008, when the financial crises took place. The global crisis attracted many researchers investigating it from corporate governance point of view, mainly attributing the cause of the crisis to the failure of corporate governance regulations (Kumar, 2013). It is important to study a period during which financial crisis took place as it will help us to provide insight as to whether directors are overpaying themselves given the current economic environment. Therefore, the main question we will address in our research is that whether executive remuneration which is considered to be extremely high can be attributed to the agency issues or whether compensation is in line with an increasing market value of firms and directors' remuneration is based on firm performance.

The empirical study will focus on generating estimates for our remuneration model for both the UK and Spain. As stated earlier, these two countries are different in terms of legal

arrangements, culture, origin and the quality of law enforcement (meaning that investors may seek an effective help from courts if directors are believed to act only in their own interests).The UK has been chosen for our analysis as an example of country's law being originated from the common law and also a country which has developed Combined Code which serves as an example for many other countries in the world. Spain represents French origin (originally derived from Roman civil law), which is considered to be the weakest in terms of legal protection and implies that it is easier for directors' to expropriate profits and set higher levels of remuneration for themselves. These two countries were chosen based on La Porta et al. (1998) indices – shareholder rights, protection of creditor rights and rule of law. Comparing indices on cross-country level, we have chosen two countries with the highest indices from two legal groups – common law and civil law.

Even though this study does not analyse the effect of legal aspects on directors' remuneration, meaning that we do not include variables in our regressions which measure shareholders' rights, rule of law, etc. as our research questions and objectives concentrate on the effect of firm performance and corporate governance measures on executives' remuneration specifically; it is still important to understand these legal differences as they largely impact accounting standards and development of corporate governance. That is why this study considers differences of the development of law in these two countries.

3.5 Final Sample Size

All dependent and explanatory variables for both countries were collected from two databases and the availability of data had an effect on our final sample size. Our final sample size has largely been affected by the number of corporate governance reports available on Manifest, in particular Spanish firms did not report remuneration of executive directors.

Similar issue was reported in the study carried out by Gigliotti (2013), where a number of firms considered for the examination were reduced from 331 to 145 due to incomplete historical data regarding executive compensation.

Table 3.1 and 3.2 show total number of firms for UK and Spain respectively considered for this analysis. As the data was collected for 2005-2011, we would expect the final sample to be 1,666 observations (238 times 7) for the UK and 217 observations (31 times 7) for Spain. However, as some reports for certain years were missing our final sample is 1525 observations for UK and 114 for Spain. Therefore, unavailability of data (either not having reports for certain years at all or missing remuneration value) on Manifest had a great impact on our final sample size.

Table3.1: The composition of the firms in the sample by industry (UK)

Industry	No.	%
Basic Materials	17	7.14
Consumer Goods	26	10.92
Consumer Services	52	21.85
Financials	37	15.55
Industrials	55	23.11
Health Care	8	3.36
Oil and gas	14	5.88
Technology	15	6.30
Telecommunications	7	2.94
Utilities	7	2.94
Total	238	100.00

Table 3.2: The composition of the firms in the sample by industry (Spain)

Industry	No.	%
Basic Materials	1	3.23
Consumer Goods	1	3.23
Consumer Services	4	12.90
Financials	4	12.90
Industrials	9	29.03
Health Care	2	6.45
Oil and gas	1	3.23
Technology	2	6.45
Telecommunications	1	3.23
Utilities	6	19.35
Total	31	100.00

3.6 Empirical Methodology

This section will describe how our models are estimated. All the estimates are obtained from EViews.

3.6.1 Modelling static

The general form of the static form of our remuneration model is as follows:

$$LNTOTREM_t = \alpha + \beta_1 x_{1t} + \beta_2 x_{2t} + \cdots + \beta_n x_{nt} + \varepsilon_t \quad (3.1)$$

$$REMGP_t = \alpha + \beta_1 x_{1t} + \beta_2 x_{2t} + \cdots + \beta_n x_{nt} + \varepsilon_t \quad (3.2)$$

$$REMMV_t = \alpha + \beta_1 x_{1t} + \beta_2 x_{2t} + \cdots + \beta_n x_{nt} + \varepsilon_t \quad (3.3)$$

Whereα is a constant, β stands for coefficient of the $x's$ of explanatory variables.

We estimate our remuneration models using both the standard OLS and GMM estimation methods. Both methods are used for comparative purposes. The OLS traditional regression is used in many empirical studies to test for pay-performance relationship (e.g. Barros and Nunes, 2007; Chhaochharia and Grinstein, 2009). However, OLS estimation methods often lead to mis-specification and that could be caused by measurement errors in the variables, or because independent variables have autocorrelation in the residuals (Ghosh and Sirmans, 2005; Core et al., 1999). As all corporate governance variables are manually extracted from corporate governance reports, we might expect to have some errors in the dataset, even though it has been carefully checked.

Therefore, there are alternative approaches (Barros and Nunes, 2007) which can be chosen to resolve problems such as autocorrelation and heteroskedasticity and we chose the use of

generalised method of moments estimation method (GMM model), based on the reasons outlined below.

The GMM method is an instrumental variables approach. Our instruments are all variables used in the estimation (and previously in OLS regression). One of the main advantages of this method is that it is used to avoid the problems of autocorrelation and heteroskedasticity which often plague the standard OLS method and in turn affects estimation efficiency (Baum et al., 2003). Another main advantage of the GMM method is that it provides a unified framework when analysing results of other common estimation method such as OLS and IV (instrumental variables approach) (Kennedy, 2008). GMM estimator can be identified by including the exact number of instruments as the number of independent variables. The validity of this model specification can be checked by applying Sargan test which will be discussed in the Diagnostic Tests section in this chapter.

We employ the general-to-specific methodology popular in the econometrics literature by specifying all our models in general terms. Then we use decision rule that allows us to sequentially remove each variable with an insignificant *p*-value from the model as long as the elimination minimises the Akaike Information Criterion (AIC) (which allows comparing models and accepting the next best estimated model) and reduces standard error (SER) of the regression. This approach is in line with Pagan's (1987) recommendation regarding model selection using the general-to-specific approach. Our final estimates will be a reduced version of the equations (3.1) to (3.3). Full models as they were run for the first time will take the following form both for OLS and GMM. It is expected that we will end up with different reduced versions for both countries, but what we want to see is the effect of firm performance and monitoring on remuneration.

$$LNTOTREM_t = \alpha + \beta_1 FEES_t + \beta_2 LNTOTASSETS_t + \beta_3 GPM_t + \beta_4 LNEBIT_t + \beta_5 OPM_t + \beta_6 REMUNNETINC_t + \beta_7 ROA_t + \beta_8 ROCE_t + \beta_9 ROE_t + \beta_{10} DEBTMV_t + \beta_{11} LNMV_t + \beta_{12} LTDEBTMV_t + \beta_{13} NCFMV_t + \beta_{14} TOBINQ_t + \beta_{15} LIBASS_t + \beta_{16} LNSTDEBTLTDEBT_t + \beta_{17} LNTOTDEBT_t + \beta_{18} LTDEBTTOTASS_t + \beta_{19} DY_t + \beta_{20} EPS_t + \beta_{21} LNTAXCF_t + \beta_{22} ACOMP_t + \beta_{23} CEOCHAIR_t + \beta_{24} COMP_t + \beta_{25} DIROWN_t + \beta_{26} FEMALE_t + \beta_{27} INDNEDS_t + \beta_{28} MEETING_t + \beta_{29} NONINEDS_t + \beta_{30} RCOMP_t + \beta_{31} SIZE_t + \beta_{32} Y2005_t + \beta_{33} Y2006_t + \beta_{34} Y2008_t + \beta_{35} Y2009_t + \beta_{36} Y2010_t + \beta_{37} Y2011_t + \varepsilon_t$$

After certain variables will be removed from these models, we will end up with different "reduced" models for each country and each specification method.

3.6.2 Modelling dynamics

General models are estimated as follows:

$$LNTOTREM_t = \alpha + \beta LNTOTREM_{t-1} + \beta LNTOTREM_{t-2} + \beta x_{1t} + \beta x_{1(t-1)} + \cdots + \beta x_{nt} + \beta x_{n(t-1)} + \varepsilon_t \quad (3.4)$$

$$REMGP_t = \alpha + \beta REMGP_{t-1} + \beta REMGP_{t-2} + \beta x_{1t} + \beta x_{1(t-1)} + \cdots + \beta x_{nt} + \beta x_{n(t-1)} + \varepsilon_t \quad (3.5)$$

$$REMMV_t = \alpha + \beta REMMV_{t-1} + \beta REMMV_{t-2} + \beta x_{1t} + \beta x_{1(t-1)} + \cdots + \beta x_{nt} + \beta x_{n(t-1)} + \varepsilon_t \quad (3.6)$$

Our next set of remuneration models allows for dynamic effects. Allowing for dynamic adjustments is important. Most academic literature only considers single time period (Tosi et al., 2007; Edmans et al., 2012) so that dynamics are ignored. Dynamic setting is important as it allows remuneration contracts to be designed in a way that executives are rewarded in the future for their efforts and that makes them concentrate on long-term value of the firm rather than focus on short-run which only makes firm's stock price to go up at the expense of future increase in firm's value (Edmans et al., 2012). Dittman et al. (2012) also highlight the importance of dynamics to be studied as it takes time for compensation contracts to be adjusted in a non-stationary environment. Some previous studies have incorporated the dynamic setting in their analysis and confirmed that capturing time effect provides better estimation of the relationship between compensation, firm performance and corporate governance (Noe and Rebello, 2012).Therefore, in order to have a comprehensive picture of the estimated results for these particular datasets and capture the reality, we estimate dynamic models.

As such, we capture dynamic effect in directors' pay by introducing a lagged directors' remuneration in our models together with other financial variables (see also Murphy, 1999). Since current firm performance may reflect performance in the past and the associated compensation. This is because it is more likely to firm performance will be rewarded in the future. As before, we use the general-to-specific forms of our dynamic models.

The coefficients are also estimated using OLS and GMM methods. GMM estimation method is justified and applied by many academic in dynamic setting for panel data (Arellano and

Bond, 1991; Haynes et al., 2007) as it helps to create instrumental variables free from second-order autocorrelation, which is often a problem once lagged variables are introduced into a model, especially in the presence of serial correlation in error terms (Nickell, 1981) as it is more efficient in constructing an instrument for lagged variables. Also lagged dependent variables can often be used as instruments too (Sargan, 1980), especially if models are expected to have autoregression in residuals.

We apply similar decision rules as in section 3.4.1 to derive the final models, i.e. removing variables with highest probability as long as AIC and SER are minimised. Final estimates a reduced version of equations (3.4) to (3.6).

3.6.3 Panel Cointegration and Error-correction Models

A final aspect of our analysis is to test for a long-run relation between director remuneration and the performance of the firms. For example, it is likely that directors' remuneration is in line with the value of the firm and therefore under/over payment of directors' remuneration has a long-run cointegration with firm value. There are now econometric methods to test for long-run relation using panel data tests based on adaptation of the work for Engle and Granger (1987). Last empirical chapter of the thesis will be covering long-term performance; we will test whether there is a long-term cointegration between total executives' remuneration and other independent variables. The main reason for testing it is to see whether equilibrium can be achieved in the long-run if there is any shock affecting variables because of certain economic and financial climate. Despite the considerable research carried out to test for dynamic effects, the area still requires furthering. Specifically, we add new insights into research by applying panel unit root tests and error-correction models to test for co-movement between variables. The methodology for this chapter will consist of three main steps: In that case, we are able to econometrically test for panel unit root tests, panel co-

integration and establish panel error-correction models (ECMs) to test the variables of interest. The set up for this approach are as follows.

First of all panel unit root tests will be used to test for the stationarity of the variables and the order of integration of each variable. Three panel unit root tests will be employed to determine that: the LLC (Levine, Lin and Chu test), the IPS (Im, Pesaran and Shin) and ADF-Fisher Chi-square.

The most commonly used panel unit root test is the LLC, which is based on the ADF (Augmented Dickey Fuller) test but is adapted for panel data. Previous empirical research employs this test (e.g. Ouedraogo, 2013) when panel data is used for the analysis. One of the main advantages of this method is that this test is best applied for panels of moderate size (Levin et al., 2002) which in turn makes it appropriate for our datasets.

The panel unit root test for each variable can be stated as follows:

$$\Delta y_{it} = \alpha_i + \beta_i y_{it-1} + \sum \beta_{in} \Delta y_{it-N} + \varepsilon_{it} \qquad (3.7)$$

where$\Delta y_{it} = y_{it} - y_{it-1}$ is the first-order difference operator, α is a constant, $t = 1, \dots, T$ time periods. The panel unit root statistics is the t-ratio ofy_{it-1}. All three estimation techniques will be applied to test for the unit root; however, the decision will be based on the LLC test results as this test is the most widely used one for the panel dataset (Ouedraogo, 2013). We will test for stationarity firstly at the level form. Insignificant coefficients imply that variables contain unit roots. The panel unit root test is then performed on the first difference of the variable as follows:

$$\Delta\Delta y_{it} = \alpha_i + \beta_i \Delta y_{it-1} + \sum \beta_{in} \Delta\Delta y_{it-N} + \varepsilon_{it} \qquad (3.8)$$

Where$\Delta\Delta y_t$ is the second-order difference of the variable. A small *p*-value for the t-ratio of Δy_{t-1}confirms the level panel unit root result. The following hypothesis will be tested for panel unit root tests:

H_0=$\beta = 0$ (non-stationarity)

H_1=$\beta < 0$ (stationarity)

Then we move on to perform the second step of our empirical analysis which is panel cointegration tests. This technique will help us to determine the long term relationship between total remuneration (measured as LNTOTREM) and each explanatory variable for which we want to identify this relationship. The main reason for that is to determine whether the system is in equilibrium in the long-run. The methodology adopted is based on Engle and Granger (1987) two-step methodology (see also Pedroni, 2004). Some previous studies (e.g. Apergis and Payne, 2012; Ouedraogo, 2013) used this approach so we will adopt similar technique. The Engle and Granger (1987) two-step methodology involves running the level variables in an OLS for the variables that contain a unit root and capturing the residuals to apply a panel unit root test. So to capture the residuals in the level regression, we regress LNTOTREM on each of the explanatory variable with a constant. Then we use the LLC, the IPS and ADF-Fisher Chi-square to test for a unit root. Specifically, the level regression takes the following form:

$$LNTOTREM_{it} = \alpha_i + \beta_i x_{it} + \varepsilon_{it} \qquad (3.9)$$

where LNTOTREM is dependent variable, α is a constant, β is coefficient of variable x,. $x$represents independent financial and corporate governance variables in each regression of LNTOTREM as the dependent variable. ε is a residual on which we will perform unit root tests as in equation (3.7), based on the information set at t.Some variables in this model will take

the form of first order difference and that will be determined by previous panel unit root test results. If variables are stationary at the level, then we will include this variable in the level form, however, if they are stationary at 1st difference we will use the following form:

$$LNTOTREM_{it} = \alpha_i + \beta_i \Delta x_{it} + \varepsilon_{it} \quad (3.10)$$

We will also apply the same equation for determining error correction terms in our final step, therefore:

$$\varepsilon_{it} = ECT_{it} \quad (3.11)$$

$$\Delta ECT_{it} = \alpha_i + \beta_i ECT_{it-1} \quad (3.12)$$

Once cointegration between variables has been established, we then complete third and final step of long-run analysis and set up an error-correction model (ECM) using the residuals in the level regression with a lag as the error-correction term.

ECMs are used to examine whether disequilibrium caused by various shocks happening in an economy can be corrected in the next time period to restore previous equilibrium between variables (Engle and Granger, 1987). The relationship between cointegration and ECMs were first developed by Granger (1981). This idea was extended in Engle and Granger (1987). The basic Engle and Granger (1987)theorem states that if there is a cointegrating relation between two or more variables, then an ECM can be formulated to establish the short- and long-run adjustments to equilibrium assuming prior disequilibrium amongst the variables.

The estimate of the ECM for each country will use both methods - OLS and GMM estimations. We will also perform diagnostic tests to check for autocorrelation in the residuals and heteroskedasticity. We use the general-to-specific methodology to set up the model as broadly as possible. Following Pagan's (1987) recommendation, we eliminate the insignificant coefficients as long as this process minimises standard error and Akaike Information Criterion

(AIC). This allows us to obtain more parsimonious ECMs. The magnitude of the error-correction term allows us to determine how quickly the variables adjust to reach equilibrium.

For both, OLS and GMM estimation methods we will run two models – the first one capturing residual for the whole regression (when including all independent variables from the dataset in the model) and is expressed as ECTTOTAL (which will be computed by running a OLS regression on all independent variables with LNTOTREM being dependent variable and capturing the residual). It will be modeled in the following way:

$$\Delta LNTOTREM_{it} = \alpha_i + \beta_i \Delta x1_{it-1} + \beta_i \Delta x2_{it-2} + \cdots \beta_i \Delta xn_{it-1} + \beta_i ECTTOTAL_{it-1} + \varepsilon_t \quad (3.13)$$

Where$x1_{it}$, $x2_{it}$, etc. are explanatory financial and corporate governance variables, Δ is the difference operator and $t-1$ determines lag of the variable. For all ECMs we will use first difference for variables which are stationary in level and second difference if variables are stationary in first difference. Lags are also applied to all variables apart from dependent LNTOTREM.

The second model will include residuals measured between individual pair-wise relationships between two variables (LNTOTREM and other variables measuring firm performance and/or corporate governance):

$$LNTOTREM_{it} = \alpha_i + \beta_i x_{it} + ECT_{it-1} + \varepsilon_{it} \quad (3.14)$$

This OLS regression will be applied for all selected individual pair-wise relationships to determine error terms. The error-correction model is specified as follows:

$$\Delta LNTOTREM_{it} = \alpha_i + \beta_i \Delta x1_{it-1} + \beta_i \Delta x2_{it-1} + \cdots + \beta_1 ECTx1_{it-1} + \beta_i ECTx2_{it-2} + \varepsilon_{it} \quad (3.15)$$

Both ECMs regressions will be tested for Spanish and UK companies.

3.6.4 Diagnostic Tests

We also apply a battery of diagnostic tests to the parameters of our final OLS and GMM models for static, dynamic and error correction models. The results of these tests should help us to understand whether our estimations are reliable or not. Firstly, the second-order autocorrelation in the residuals will be checked using Q-statistics. We will also perform Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags. The null hypothesis states no autocorrelation, which is rejected if coefficients are significant.

Second test will involve checking for the presence of heteroskedasticity. We will employ Breusch-Pagan-Godfrey and look at *F*-statistics coefficients, the probability of which will determine whether we reject or accept the null of no heteroskedasticity. Significant coefficient will reject the null.

We are also going to perform the Sargan test helps to analyse the validity of instruments for GMM models. The Sargan test seeks to establish whether overidentifying instruments are uncorrelated with the error. Overidentification occurs when there are more instruments than the bare minimum of one per each troublesome variable. The probability of coefficients will determine whether we reject or accept the null hypothesis of no correlation. There is, however, a certain criticism of this test. If for example, the null hypothesis of no correlation between overidentifying instruments and errors is rejected, it does not tell us which one or whether there are a few of them (Kennedy, 2008).

3.7 Preliminary Analysis

In this sub-section, we discuss the descriptive statistics for our variables as well as the results of our correlation tests. Both estimates are important as they provide evidence of the basic statistical patterns in the data and in turn provide guidance on the statistical methods that may be appropriate for multivariate analysis.

3.7.1 Descriptive Statistics for the UK

Table 3.3 shows the descriptive statistics for all the variables. Our descriptive statistics are based on measures of central tendency (mean), standard deviation, median, skewness and kurtosis. Skewness and kurtosis provide evidence of deviation from central tendency and in turn a measure of the normality of the variables.

Firstly, looking at the firm size measured expressed as a natural logarithm of total assets, we report that mean value is 14.23. A study by Li et al. (2015) also examines relationship between CEO compensation and firm performance for non-financial firms but in the US and they report mean value for LNTOTASSETS to be 9.1205. This difference could results from having larger firms in our samples size.

Table 3.3 shows that accounting ratios on average are quite high (looking at mean values). For example, ROE is 42.23% which means firms are efficient at generating income on investment. ROA measures how profitable a firm is in relation to its total assets. Mean and median values are 8.56 and 8.79 respectively which are slightly lower compared to the prior literature (e.g. 10.65 and 10.587 by Core et al., 1999). However, standard deviation is higher (8.79) compared to the same study (7.101). These results suggest that on average return on assets is lower for this particular sample size; however, it is more spread out.

Descriptive statistics also shows that on average UK boards have 44% independent, whereas 8% of UK boards include non-independent directors. The former results are consistent with prior work reporting the fraction of independent directors (Mayers et al., 1997; Schultz et al., 2013). 96% of firms have separate role for the CEO and Chairman indicating better monitoring and compliance with recommendations provided in the Code of Good Practice. In contrast, Core et al. (1999) report that 75.6% firms have combined roles for the US companies. Schultz et al. (2013), examining pay-performance link for the Australian listed firms, also report descriptive statistics for a few corporate governance variables. They measured a board duality using a dummy variable too, however, in contrast to our study a dummy variable is equal to 1 if role are combined therefore we would expect mean value to be much lower than reported in this study and it is equal to 0.09. For example mean value for RCOMP in their study is 0.51, whereas value reported in Table 3.3 is 0.64.

Table 3.3 shows that quite a few variables are far from being normally distributed as indicated by skewness and kurtosis. The Jarque-Bera test for non-normality was also performed which resulted in most coefficients being significant confirming non-normal distribution.

Table 3.3: Descriptive statistics for the UK

Variable	Obs.	Mean	SD	Min.	Med.	Max.	Skew.	Kurt.
Dependent Variables								
LNTOTREM	1343	7.76	0.69	4.80	7.74	10.03	0.12[a]	0.42[a]
REMGP	1343	1.19	1.98	-18.13	0.70	34.80	6.39[a]	101.48[a]
REMMV	1343	0.34	0.53	0.00	0.20	5.69	38.32[a]	1468.41[a]
Independent Variables								
FEES	1524	0.91	1.26	0.00	0.50	13.53	4.11[a]	23.66[a]
LNTOTASSETS	1524	14.23	1.62	10.15	14.05	19.21	0.40[a]	0.09
Panel A: Profitability								
GPM	1231	37.93	21.83	-3.06	34.96	95.98	0.51[a]	-0.35
LNEBIT	1231	11.95	1.64	6.02	11.74	17.37	0.54[a]	0.73[a]
OPM	1231	16.11	12.83	-93.24	12.78	71.06	-18.13[a]	611.64[a]
REMUNNETINC	1231	0.04	0.32	-6.35	0.02	4.22	-5.32[a]	182.85[a]
ROA	1231	8.56	8.79	-5.54	6.87	171.92	3.25[a]	47.83[a]
ROCE	1231	16.98	15.58	-15.74	13.38	215.24	21.97[a]	688.45[a]
ROE	1231	42.23	227.18	-76.53	19.31	7206.45	28.36[a]	946.22[a]
Panel B: Firm Value								
LNMV	1511	14.03	1.57	5.60	13.82	19.28	0.48[a]	0.93[a]
NCFMV	1511	0.39	9.40	-2.05	0.10	365.19	38.77[a]	1505.84[a]
TOBINQ	1511	1.37	2.28	0.00	0.85	40.46	10.16[a]	144.42[a]
Panel C: Leverage								
DEBTMV	1511	2.16	43.17	0.00	0.24	1359.20	28.42[a]	824.94[a]
LIBASS	1389	0.28	0.19	0.00	0.26	1.94	0.98[a]	4.10[a]
LNSTDEBTLTDEBT	1314	10.33	2.49	2.20	10.51	16.23	-0.31[a]	0.08
LNTOTDEBT	1389	12.57	2.33	2.20	12.81	17.50	-1.01[a]	1.91[a]
LTDEBTMV	1511	2.00	41.55	0.00	0.20	1359.09	29.20[a]	881.75[a]
LTDEBTTOTASS	1389	0.22	0.18	0.00	0.19	1.13	1.05[a]	1.34[a]
Panel D: Investment								
DY	1522	3.14	2.46	0.00	2.92	38.29	4.56[a]	49.74[a]
EPS	1522	0.41	1.06	-10.97	0.24	15.62	1.64[a]	66.85[a]
Panel E: Taxation Cash Flow								
LNTAXCF	1325	10.13	1.84	3.50	9.96	16.46	0.35[a]	1.26[a]
Panel F: Corporate Governance								
ACOMP	1325	0.66	0.47	0.00	1.00	1.00	-0.64[a]	-1.59[a]
CEOCHAIR	1325	0.96	0.19	0.00	1.00	1.00	-4.84[a]	21.41[a]
COMP	1325	0.81	0.39	0.00	1.00	1.00	-1.58[a]	0.50[a]
DIROWN	1325	4.82	12.29	0.00	0.32	72.80	38.91[a]	1517.11[a]

Table 3.3 cont.

Variable	Obs.	Mean	SD	Min.	Med.	Max.	Skew.	Kurt.
Panel F: Corporate Governance								
FEMALE	1325	0.07	0.09	0.00	0.06	0.57	1.27[a]	2.02[a]
INDNEDS	1325	0.44	0.13	0.00	0.44	1.00	-0.40[a]	1.14[a]
MEETING	1325	1.05	0.48	0.00	1.00	4.00	1.27[a]	3.54[a]
NONINEDS	1325	0.08	0.12	0.00	0.00	0.79	1.85[a]	4.12[a]
RCOMP	1325	0.65	0.48	0.00	1.00	1.00	-0.63[a]	-1.60[a]

Notes:[a] denotes significance at 1% level. Obs stands for the total number of observations in the dataset. The distribution of each variable is presented by showing mean, standard deviation (SD), minimum (Min.), median (Med.), maximum (Max.), skewness (Skew.) and kurtosis (Kurt.). Significance of skewness and kurtosis was determined using table of statistics provided in Snedecor and Cochran (1989). Please refer to Appendix A for the definition of each variable.

3.7.2 Descriptive Statistics for Spain

Please refer to Table 3.4 below for descriptive statistics for Spanish firms.

Firstly, looking at the natural logarithm of total assets, mean value is 16.34. Perez-de-Toledo et al. (2013) for example carried out a study analysing Spanish listed firms for the period 2003-2007, report this value to be slightly lower – 14.20. Therefore, it can be said that there is not a large difference between our study and previous published results.

Descriptive statistics shows that Spanish firms have lower accounting ratios on average that UK firms apart from OPM, DY and EPS for our datasets. However, comparing to previous empirical studies for Spanish companies we observe some differences. For example, ROA mean and median differs substantially to the value reported in study by Crespi-Cladera and Gispert (2003). Authors report these values to be 0.0175 and 0.0249 respectively, whereas our values are 5.64 and 4.91. Such large difference can be attributed to the fact that their study has taken into account 1990-95 time period and accounting profits and value of assets would be lower on average. The mean value of ROE is also inconsistent with some previous published empirical work. For example, Lucas-Perez et al. (2015) reports a value of 0.156.

Leverage descriptive statistics can also be compared to some studies for Spanish companies. Our DEBTMV mean value to be 0.15, whereas Perez-de-Toledo et al. (2013) report this value to be 0.228 in their analysis.

In terms of corporate governance variables, we also report interesting results. The mean fraction of independent and dependent non-executive directors is 35% and 47% which is similar to results reported by Core et al. (1999) for UK firms. Comparing our results to studies for Spanish firms, it can be confirmed that for example mean and standard deviation of INDNEDS is in line with descriptive statistics presented by Fernandez-Mendez et al. (2011) and Lucas-Perez et al. (2015). Our values are 0.35 and 0.16 for mean and standard deviation; authors' values are 0.35 and 0.17 respectively (Fernandez-Mendez et al., 2011) and 0.32 and 0.18 (Lucas-Perez et al., 2015). We also report that on average there are 8% of female directors on the board which is 1% higher than in comparison to the UK firms, and 2.9% higher reported by Lucas-Perez et al. (2015). Exactly one half of firms comply with the recommendations in terms of their board size for Spanish firms. This value is slightly higher (0.860) than in the study by Lucas-Perez et al. (2015), meaning that they found that more companies comply with recommendation regarding board size.

Skewness and kurtosis indicate that there are slightly more variables which are closer to normal distribution. Significant coefficients of Jarque-Bera test confirmed non-normality of some variables, similar to reported coefficients for UK firms. Non-normality leads to inefficiency in the coefficients but the estimates are still unbiased as there they are still BLUE (Best Linear Unbiased Estimators).

Table 3.4: Descriptive statistics for Spain

Variable	Obs.	Mean	SD	Min.	Med.	Max.	Skew.	Kurt.
Dependent Variables								
LNTOTREM	90	9.83	7.11	0.00	14.14	17.39	-0.83[a]	-1.24
REMGP	90	0.80	4.29	0.00	0.10	39.33	9.12[a]	87.46[a]
REMMV	90	0.01	0.02	0.00	0.00	0.12	4.84[a]	27.83[a]
Independent Variables								
FEES	90	0.48	0.86	0.00	0.27	6.05	4.91[a]	27.50[a]
LNTOTASSETS	90	16.34	1.46	12.22	16.73	18.63	-0.48[a]	-0.48[a]
Panel A: Profitability								
GPM	102	29.90	20.36	-6.36	23.72	73.54	0.77[a]	-0.55[a]
LNEBIT	102	13.71	1.50	9.00	13.51	16.61	-0.06	-0.34[a]
OPM	102	16.14	15.13	-10.07	11.67	65.50	0.17[a]	7.20[a]
REMUNNETINC	102	0.01	0.02	-0.07	0.00	0.08	0.68[a]	12.61[a]
ROA	102	5.64	5.49	-1.10	4.91	34.40	1.70[a]	13.13[a]
ROCE	102	11.06	9.52	-1.27	8.63	67.47	2.79[a]	14.73[a]
ROE	102	22.45	15.55	-4.79	20.19	89.52	0.73[a]	3.97[a]
Panel B: Firm Value								
LNMV	114	18.91	1.97	13.01	18.75	22.32	-0.06	0.01[a]
NCFMV	114	0.04	0.21	-0.40	0.00	2.01	7.29[a]	65.13[a]
TOBINQ	114	37.60	59.49	0.09	14.37	340.84	3.10[a]	11.38[a]
Panel C: Leverage								
DEBTMV	114	0.15	0.53	0.00	0.02	4.95	7.16[a]	60.46[a]
LIBASS	114	0.33	0.23	0.00	0.26	1.63	2.04[a]	7.97[a]
LNSTDEBTLTDEBT	114	13.55	2.01	0.00	13.81	17.24	-2.99[a]	17.93[a]
LNTOTDEBT	114	15.16	1.88	6.97	15.50	17.98	-1.16[a]	2.23[a]
LTDEBTMV	114	0.12	0.47	0.00	0.01	4.50	7.83[a]	70.68[a]
LTDEBTTOTASS	114	0.28	0.17	0.00	0.28	0.61	-0.04	-1.13
Panel D: Investment								
DY	114	4.40	3.17	0.00	4.12	20.62	1.56[a]	5.47[a]
EPS	114	2.12	3.22	-0.28	1.24	21.84	4.30[a]	21.94[a]
Panel E: Taxation Cash Flow								
LNTAXCF	107	11.92	1.52	8.27	11.81	14.89	0.05	-0.58[a]
Panel F: Corporate Governance								
ACOMP	94	0.68	0.47	0.00	1.00	1.00	-0.88[a]	-1.25[a]
CEOCHAIR	94	0.34	0.48	0.00	0.00	1.00	0.63[a]	-1.63
COMP	94	0.68	0.47	0.00	1.00	1.00	-0.80[a]	-1.38
DIROWN	94	0.07	0.14	0.00	0.00	0.53	2.22[a]	3.69
FEMALE	94	0.08	0.08	0.00	0.06	0.36	1.34[a]	1.79[b]

Table 3.4 cont.

Variable	Obs.	Mean	SD	Min.	Med.	Max.	Skew.	Kurt.
Panel F: Corporate Governance								
INDNEDS	94	0.35	0.16	0.00	0.36	0.87	0.21[a]	0.15[a]
MEETING	94	0.74	0.38	0.00	0.70	2.70	1.99[a]	7.61[a]
NONINEDS	94	0.47	0.18	0.06	0.45	0.85	-0.04[a]	-0.44[a]
RCOMP	94	0.43	0.50	0.00	0.00	1.00	0.29[a]	-1.95[a]
SIZE	94	0.50	0.50	0.00	0.50	1.00	-0.11[b]	-2.02[a]

Notes:[a, b] denotes significance at 1% and 5% level respectively. Obs stands for the total number of observations in the dataset. The distribution of each variable is presented by showing mean, standard deviation (SD), minimum (Min.), median (Med.), maximum (Max.), skewness (Skew.) and kurtosis (Kurt.). Significance of skewness and kurtosis was determined using table of statistics provided in Snedecor and Cochran (1989). Please refer to Appendix A for the definition of each variable.

3.7.3 Spearman's Rank Correlation

Last stage of the preliminary analysis involves calculation of correlations between variables. Descriptive statistics results for both countries have shown that most variables are far from normal distribution meaning that the use of non-parametric estimation methods will be more appropriate. This is because the power of non-parametric tests is not affected by the violated normality assumption (see Snedecor and Cochran, 1989; Field, 2005).As such; we use the non-parametric Spearman's rank correlation as our bivariate test. The Spearman rank correlation takes on the following form (taken from Snedecor and Cochran, 1989, p.194):

$$r_s = 1 - 6\sum d^2\,[n(n^2-1)]$$

wherer_s represents rank correlation coefficient and takes the value between -1 and +1, sign indicating negative or positive correlation respectively (Snedecor and Cochran, 1989).Throughout, we test the null hypothesis of no correlation between any pair of variables using a two-tailed test. We use SPSS software to calculate correlation coefficients.

Due to a large number of correlation coefficients between all variables in our dataset, we include correlation coefficient matrices in the appendices for both countries in order not to

disrupt the flow of the thesis. The results of the correlation tests will be discussed here but we will refer to Appendix B for the UK and Appendix C for Spanish companies' correlation coefficients.

We start by looking at correlation matrix for the UK (see Appendix B). Most of the correlation coefficients between LNTOTREM and other variables are small in absolute value, the largest correlation reported is equal to 0.682 (significant at 1% level) indicating a positive relationship between LNTOTASSETS and LNTOTREM; confirming what we expected; the larger the firm is the higher the expected directors' pay. The coefficient is also quite high for LNEBIT (0.650). The correlations between LNTOTREM and variables which include the measurement of market value are significant and positive indicating that if firm's market value increases, the executives' compensation packages will go up as well. The relationship between LNTOTREM and corporate governance variables are not consistent in terms of their sign. We hypothesised that better corporate governance practices (usually referring to greater monitoring) will be associated with a reduction in total pay. We observe that this predicted relationship only holds for COMP, DIROWN, MEETING and NONINEDS. Sanchez-Marin et al. (2010) also highlight that in depth analysis of corporate governance and directors' pay reveals certain contradictions and provides conflicting arguments. Taking into account for example previous findings, it can be reported that for example Zajac and Westphal (1994) find a positive association between the percentage of outside directors and executive directors' pay, whereas Boyd (1994) reports the opposite. Another example Ozkan (2007a) reports a positive association between number of non-executive directors and executives' pay. Therefore, it would be expected to see some difference in results.

Appendix C reports correlation coefficients for Spain. We report strong positive correlation between LNTOTREM and LNTOTASSETS, holding the same relation as for UK firms.

Correlation coefficients between LNTOTREM and corporate governance variables are not significant.

Correlation coefficients between our independent variables are high in small number of cases. For example, coefficient between LNEBIT and LNTOTASSETS is 0.846 for UK; between LNTOTDEBT and LNEBIT is 0.859 for Spanish firms. It is generally accepted that a value is high if it is around 0.8-0.9 in absolute value. Highly correlated independent variables indicate multicollinearity between them which might affect the estimates of individual predictors, i.e. they might be found to be statistically insignificant but without collinearity they are significant (but it does not affect the reliability of the whole model).

There are ways to deal with multicollinearity, for example certain variables can be removed from the models. It is simply done by dropping one of the correlated variables in the model. However, the problem with this as described by Kennedy (2008) can be that omitting a variable might introduce a bias into remaining variables. It will also be difficult to use in our models as we aim to test the effect of all variables on our dependent variables.

Another important aspect which needs to be considered is that in certain cases multicollinearity won't cause too many issues in research. Example used by Kennedy (2008), the famous example of the Cobb-Douglas function where capital and labour are analysed being highly correlated. The rule of thumb which author presents is that researchers should not worry about multicollinearity of t statistics in models is greater than 2 and that is the case for almost all variables in our predicted models.

Also, following general-to-specific methodology, a lot of variables will be removed from the initial model as long as we maximise R-squared and reduce SER. In the future research it can, however, be suggested that factor analysis can be considered or formation of a principal

component. Here, we just want to see the general relationship between certain variables and remuneration.

Spearman's Rank correlation coefficient analysis provided us with useful insights about relations between variables; however, we cannot entirely rely on it. Bearing this in mind we move on to analyse our estimations using OLS and GMM approach.

3.8 Conclusion

It has been established what estimation methods will be adopted to analyse our data and test the predicted hypotheses. Using OLS and GMM estimation methods we plan to test static and dynamic relationship between executive directors' remuneration, firm performance and corporate governance. Taking dynamic setting further, we adopt panel cointegration and panel error-correction models.

Descriptive statistics helped to determine non-normality of most financial and corporate governance variables, meaning that we might experience some efficiency problems when estimating our regressions. However, the GMM estimation method should help us to overcome this problem.

Preliminary analysis and Spearman's correlation coefficient matrices have helped to test for relationships between variables but we cannot rely entirely on these results as they can only be used as an indication for sign allowing us to carry on with testing those using the OLS and GMM estimation methods.

We now take our empirical analysis to the next step and test the relationships between variables; next two chapters will cover the analysis and interpretation of the reported results in detail for both countries.

Chapter 4 UK Remuneration Levels and Corporate Governance

4.1 Introduction

This chapter presents the empirical results for the relationship between directors' remuneration and the performance of the largest 238 UK firms. The models also incorporate corporate governance measures. The models are estimated in static and dynamic context using both OLS and GMM methods. Three measures are used as dependent variables: natural logarithm of total remuneration (LNTOTREM), remuneration level over gross profit (REMGP) and remuneration level over market value of the firm (REMMV) – as described in Chapter 3. The different measures are used to potentially accommodate their varying impacts. For example, remuneration level scaled by market value of the firm (REMMV) seeks to relate remuneration to firm value. Firm value can be reduced if executives are excessively paid.

The chapter contains two main sections: the first section covers the empirical results for the static models; the second section presents the dynamic versions of the models. Each section begins by addressing the results of diagnostic tests results. A list of all variables used in this analysis (both dependent and explanatory) is presented in the Appendix A together with the abbreviations which we refer to when we present the empirical results.

Throughout the empirical chapters, we employ the general-to-specific methodology (see Pagan, 1987) which is well known in the econometric literature. This approach allows us to move from a general to a more parsimonious model that is more readily interpretable. The approach works under the assumption that the exact number of variables included in the model is not known *a priori* and that the inclusion of a smaller set of variables lead to omitted variable biased. Similarly, the inclusion of all variables may lead to over-parameterization.

Following the guidance of Pagan (1987), we include all potential variables in the model in the first instance. We sequentially remove each variable from the model starting in each sequence with the one with the largest *p*-value. This variable is removed as long as its removal reduces the standard error of the regression and minimises the Akaike Information criterion (AIC).The process is discontinued just the point before when both SER and AIC increase. The process can lead to different variable appearing in each model. We believe that is not a problem since ultimate variables that are removed would have been insignificant. This means that they would not have contributed to the explanatory power of the model.

Our results suggest that capturing the time effect by introducing lagged variables in our models does not entirely solve the problem of autocorrelation. GMM models are also believed to play an important role in the analysis if there is a presence of autocorrelation and heteroskedasticity. Overall, our estimated results suggest that the dynamic GMM models provide better results for testing the relationships as it was expected.

4.2 Static Models

This section covers the estimated results for all 6 static models. We approach our analysis by discussing some of the diagnostic tests based on the static OLS and GMM estimation methods (see Table 4.1). These statistical tests are useful as they allow us to determine the degree of reliability of the estimated coefficients for the statistical relationships we wish to portray.

4.2.1 Diagnostic tests for static models

We start by looking at the number of observations included - N. Missing data have had an effect on the final number of observations in our estimated models. Based purely on the highest number of observations, we can conclude which model is more reliable due to the

larger sample size. The number of observations varies according to the model. This is because we estimated the full model with all of the variables in the first instance but sequentially eliminated the variable with that largest *p*-value as long as this process reduced the standard error (SER) of the regression and minimised the Akaike Information Criterion (AIC). This process is undertaken to generate a parsimonious model similar in spirit to the general-to-specific approach used in time series estimation (see Pagan, 1987).

$\overline{R^2}$is used to assess the goodness of fit of the model as it shows the extent to which the model explains the variation in the data. A reasonable level for this and typically not close to 1.0 suggests a better model fit (Granger and Newbold, 1974; Field, 2005) since we have to avoid the usual spurious regression problem. The $\overline{R^2}$ values range from 0.3271 to 0.5904 for the static models. The highest$\overline{R^2}$ values are 0.5904 and 0.5468 for models 1 and 4(Table 4.1).$\overline{R^2}$values for the OLS models are in a similar range as under the GMM so the explanatory power of the models has not improved under the GMM. These results allow us to conclude that OLS static model where our dependent variable is LNTOTREM explain higher percentage of the variation in the data.

Standard error is also an important indicator to consider as it shows the standard deviation of the random component in a given dataset meaning that the lower the standard error, the better estimate the model provides. The lowest standard errors reported are for models 3 and 6 where standard error coefficients are 0.3759 and 0.3608 respectively.

Akaike Information Criterion allows comparing models and choosing the one with the lowest AIC value; we accept the next best estimated model for each case by reducing one variable at a time (Pagan, 1987). The lowest AIC value is 0.8932 (model 3).

The Q-statistic was performed to check for the second-order autocorrelation. We observe that coefficients are significant indicating that the Q-statistic rejects the null of residual correlation

for both the OLS and GMM estimates, meaning that the coefficients are inconsistently estimated, even under the GMM. So we should apply some caution when interpreting the coefficients. This test would in particular be important and interesting for dynamic models as lagged variables help solving the problem of autocorrelation.

The *F*-test for the Breusch-Pagan-Godfrey statistics (Breusch and Pagan, 1979) cannot reject the null hypothesis of no heteroskedasticity in the OLS residuals. The reported *F*-statistic is significant at 1-percent level for all three OLS static models (Table 4.1, OLS models 1, 2 and 3).Thus it is no surprise that the Jarque-Bera test rejects the null hypotheses of normality too. As it was previously discussed in methodology, non-normality leads to inefficiency in the estimated coefficients but the estimates are still unbiased as there they are still BLUE.

Diagnostic results for static models indicate that even when GMM estimation method is used we still experience autocorrelation problem. The inclusion of additional lags for the dynamic case does not eliminate the autocorrelation problem. This means that our results suggest should be interpreted with extra caution as the coefficient estimates are inconsistent. Sargan test coefficients are extremely small and their probabilities determine that we reject the null on no correlation between overidentifying instruments and errors.

4.2.2 Empirical results for static models

Chapter 2 has already covered the corporate governance implications and also outlined the hypotheses. Also, empirical work suggests that if compensation contracts are designed in an optimal way, usually based on good financial performance, this would increase directors' motivation and decrease the agency problem (Ozkan, 2007; Doucouliagos et al., 2012b). In this chapter we solely concentrate on our predicted results whilst also drawing some comparisons with previous studies and also testing whether our hypotheses hold for this

particular dataset. We start our discussion with the main findings on financial performance and linking it to the theory as to why we observe certain results.

Table 4.1 presents the coefficients of both estimation methods for each of the three dependent variables. The explanatory variables are grouped into the following broad categories: profitability, firm value, leverage, investment, corporate governance and year effect for ease of interpretation.

Firm Size

We start by looking at firm size, measured as a natural logarithm of total assets. Many studies (e.g., Haynes et al., 2007) outline the importance of the firm size as a significant variable impacting the level of remuneration. Executive remuneration is positively related with firm size - meaning that larger firms pay more than small firms. Table 4.1 shows a significant and positive relationship between LNTOTASSETS and all three dependent variables (LNTOTREM, REMGP and REMMV) for OLS estimation method. The magnitude of these coefficients is 0.2209, 0.2704 and 0.0926 respectively. These results indicate that for example 1% increase in natural logarithm of total assets leads to an increase in natural logarithm of total directors' compensation by 22.09 percentage points. Only LNTOTASSETS explains LNTOTREM and the relationship here is positive. Our results capturing the link between size measured by LNTOTASSETS accounts for up to 27.07% of the variation in measures of compensation – depending on the model. These results are in line with previous studies (e.g. Conyon and Murphy, 2000; Ozkan, 2011).

These results support theoretical prediction that the larger the firm is, the higher the levels of remuneration are. This can also be explained by the fact that large firms which have good financial performance tend to attract experienced talented workers who in turn demand higher

levels of compensation (Tervio, 2008). This argument can also be supported by competitive labour market theory (Hubbard and Palia, 1995).

Table 4.1: Determinants of executive directors' compensation, UK firms (static), 2005-2011

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
C	3.3196[a]	7.3543[a]	2.1849[a]	3.1590[a]	8.3551[a]	2.5565[a]
	(0.1311)	(0.3732)	(0.1206)	(0.1959)	(0.6674)	(0.2635)
FEES	-	-	0.0086	-	-	-
			(0.0084)			
LNTOTASSETS	0.2209[a]	0.2704[a]	0.0926[a]	0.2707[a]	-	-
	(0.0154)	(0.0669)	(0.0197)	(0.0272)		
Panel A: Profitability						
GPM	-0.0003	-0.0078[a]	0.0016[a]	-	-0.0101[a]	0.0021[b]
	(0.0006)	(0.0018)	(0.0006)		(0.0036)	(0.0009)
LNEBIT	-	-0.2454[a]	-	-	-0.2141[a]	0.1351[a]
		(0.0578)			(0.0726)	(0.0373)
OPM	-	0.0263[a]	-0.0016	-	0.0224[a]	-0.0032[b]
		(0.0034)	(0.0010)		(0.0073)	(0.0014)
REMUNNETINC	-	0.3457[a]	-	0.0947[b]	0.3538[a]	-
		(0.0970)		(0.0434)	(0.1056)	
ROA	-	0.0134[a]	-	-	-	-
		(0.0051)				
ROCE	0.0013[a]	0.0018[b]	-	0.0015[a]	0.0025[a]	-
	(0.0003)	(0.0009)		(0.0004)	(0.0006)	
Panel B: Firm Value						
LNMV	0.1330[a]	-0.4355[a]	-0.2338[a]	0.0935[a]	-0.2537[a]	-0.2785[a]
	(0.0161)	(0.0648)	(0.0204)	(0.0274)	(0.0751)	(0.0456)
NCFMV	-	-1.4904[a]	0.8227[a]	-	-1.2420[a]	0.7525[a]
		(0.2307)	(0.0683)		(0.3056)	(0.2433)
TOBINQ	-	-	0.0160[b]	-	-0.0354[c]	-
			(0.0069)		(0.0210)	

Table 4.1 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Leverage						
DEBTMV	-	-0.1027[a]	-	-	-0.0711[a]	-
		(0.0336)			(0.0259)	
LIBASS	-	-	-	-	-0.9376[a]	-
					(0.3552)	
LTDEBTMV	-	-	0.0497[a]	-0.0005[a]	-	-
			(0.0104)	(0.0001)		
LTDEBTTOTASS	-	-	-0.4245[a]	-	-	-0.2742[a]
			(0.0683)			(0.0949)
Panel D: Earnings and Distribution						
DY	-	-0.0594[a]	0.0140[a]	-	-0.0392[b]	-
		(0.0160)	(0.0046)		(0.0187)	
EPS	-0.0555[a]	-	-	-0.0532[a]	0.1386[a]	-
	(0.0129)			(0.0199)	(0.0489)	
Panel E: Corporate Governance						
ACOMP	0.0834[a]	0.2133[b]	-	-	-	-
	(0.0308)	(0.0959)				
CEOCHAIR	-	-	0.1755[a]	-	-	0.1819[b]
			(0.0553)			(0.0777)
COMP	-	-	-0.0739[b]	-0.1839[a]	-	-
			(0.0299)	(0.0673)		
DIROWN	-0.0058[a]	-0.0063[b]	-	0.0002[a]	-0.0074[c]	-
	(0.0011)	(0.0027)		(0.0000)	(0.0039)	
FEMALE	0.6901[a]	0.7670[b]	-	0.5196[b]	0.8883[b]	0.1831
	(0.1484)	(0.3806)		(0.2490)	(0.4319)	(0.1269)
INDNEDS	-1.2970[a]	-1.7696[a]	-0.2636[b]	-0.8362[a]	-1.1274[b]	-0.3447[c]
	(0.1370)	(0.3456)	(0.1067)	(0.2578)	(0.4703)	(0.1824)
NONINEDS	-0.9599[a]	-0.7218[b]	-	-0.8634[a]	-	-
	(0.1371)	(0.3608)		(0.2612)		
RCOMP	-	-0.3210[a]	-0.0479[b]	-	-0.1625[b]	-0.0485[c]
		(0.0940)	(0.0242)		(0.0794)	(0.0251)

Table 4.1 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Panel F: Year Effect						
Y2005	-0.1664[a]	-	-	-0.1583[a]	-	-
	(0.0394)			(0.0422)		
Y2006	-0.1061[a]	-	-	-0.0870[b]	-0.1301[c]	-
	(0.0382)			(0.0361)	(0.0689)	
Y2008	0.0833[b]	-	0.0836[a]	0.0835[a]	-	0.0854[b]
	(0.0379)		(0.0302)	(0.0302)		(0.0373)
Y2011	0.1088[a]	-	-	0.0847[a]	0.0928	-
	(0.0368)			(0.0286)	(0.0745)	
Diagnostic						
N	1318	1214	1338	1434	1214	1240
$\overline{R}^2$	0.5904	0.3271	0.4965	0.5468	0.3361	0.4922
S.E.	0.4442	1.0895	0.3759	0.4880	1.0826	0.3608
AIC	1.2262	3.0239	0.8932	-	-	-
Q-Stat	351.45[a]	115.98[a]	132.17[a]	380.54[a]	129.79[a]	75.48[a]
Auto LM(2)	233.2901[a]	192.7297[a]	203.8208[a]	-	-	-
Auto LM(4)	119.2481[a]	100.607[a]	105.2453[a]	-	-	-
F-statistic	12.7874[a]	3.0441[a]	13.7338[a]	-	-	-
Sargan Test	-	-	-	0.0000[a]	0.0000[a]	0.0000[a]
Jarque-Bera	286.1068[a]	23444.86[a]	55845.78[a]	720.1532[a]	24651.95[a]	64525.64[a]

Notes: Refer to Appendix A for definition of variables. Figures in round brackets are standard errors. [a, b, c] denotes that the coefficient is significant at the 1%, 5% and 10% level, respectively. N is number of observations. The S.E. stands for standard error. The AIC denotes Akaike Information criterion, measuring the goodness of fit of an estimated model. Q-Stat is checking for second-order autocorrelation in the residuals. Auto LM(2) and Auto LM(4) are Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags respectively.F-statistic stands for heteroskedasticity which is tested using Breusch-Pagan-Godfrey statistics. Sargan test analyses whether overidentifying instruments are uncorrelated with the error.

Profitability

Panel A shows the results for our profitability variables (Table 4.1). Some of the reported findings are consistent with the principal-agent considerations in the sense of a positive relation with the profit measures and directors' remuneration. However, what really matters is relative pay to performance. Most of financial indicators in our models which are used to measure firm performance are positively related to executives' compensation. For example ROA and ROCE are positively related to dependent variables and these results are consistent with previous findings summarised in Tosi et al. (2000). These results suggest that contracts may have been designed in a way to enable managers to benefit from improvements in profitability and perhaps mitigate the agency problem (Jensen and Murphy, 1990). Whether or not this works is not 100% certain. For example, the coefficients for GPM are often negative under both estimation methods. Also, LNEBIT is negatively related (24.54%). While the other profitability measures are positive, the coefficients are no larger than 10%. Even so, it seems clear the profitability is positively related to remuneration. It has also been reported by Cybinski and Windsor (2013) that larger firms with good corporate governance tend to link levels of compensation with firm performance confirming our predicted results. These findings support our hypothesis (H_1) which predicts positive relationship between remuneration and firm performance. This implies that despite controversial arguments regarding remuneration, we find that remuneration acts more as an incentive rather than creating more agency problems.

It can be argued that incentive contracts designed by the firms which exist in a competitive environment can be viewed as a tool to evaluate relative financial performance in the industry. Therefore, we would expect UK firms to deliver financial performance that commensurate with total executives' compensation.

Firm Value

Firm value measures are also related to remuneration (see Panel B). Generally, the coefficients are positive but some coefficients are also reported to be negative depending on the model and the estimation method. Looking at the natural logarithm of market value (LNMV) it can be stated that 1% increase in LNMV will cause 13.30% and 9.35% increase in LNTOTREM for OLS and GMM models respectively, supporting our second hypothesis.

TOBINQ has the least significant impact on compensation than other variables measuring firm value. Our mixed empirical evidence is supported by Tervio (2008) who finds a positive association between market value and CEO compensation. These results support our predicted hypothesis (H_2) which states that increased market value will lead to higher levels of remuneration.

Leverage

Coefficients of ratios which are used to measure the leverage of firms are presented in Table 4.1 Panel C. LIBASS is significantly and negatively associated with REMGP for GMM model: 1% increase in this ratio (meaning higher financial risk) is associated with 93.76% decrease in remuneration over gross profit.

It is unclear why DEBTMV is negatively related to REMGP unless DEBTMV captures the negative effects of underinvestment. Our results report that 1% increase in DEBTMV ratio will contribute towards 10.27% and 7.11% decrease in REMGP for models 2 and 7 respectively. That can be interpreted as higher proportion of debt in relation to market value decreases the proportion of total remuneration to gross profit. DEBTMV in contrast to LTDEBTMV also includes short-term debt. Previous research suggests that short-term debt improves the

monitoring of directors by lenders (Brockman et al., 2010) - meaning that our results can be explained by the fact that having short-term debt obligations will contribute towards creation of more optimal contracts for directors and if there is greater monitoring we will observe a decrease in the level of compensation.

LTDEBTTOTASS variable is negatively related to REMMV. We report that 1% increase in long-term debt in relation to total assets will decrease the level of remuneration to total market value by 42.45% and by 27.42% for OLS and GMM models respectively. Estimated findings are in line with the theoretical explanation offered by Kabir et al. (2013) who propose that firms which use remuneration as a tool to align directors' and shareholders' interests usually borrow at a much higher cost, therefore, in order to decrease costs for firms they are forced to decrease executives' compensation.

Earnings and Distribution

Panel D (Table 4.1) shows the results for DY and ESP. A 1% increase in DY contributes to a3.92% decrease in REMGP whereas a1% increase in EPS contributes to a 13.86% increase in executive directors' level of compensation. The results for Model 5 are in line with those of Bhattacharyya et al. (2008) for US firms for both DY and EPS.

Corporate Governance

The theory predicts that the composition of the board of directors affects the level of directors' remuneration (Guthrie et al., 2012). Boards which are considered to be more independent and undertake better monitoring improve corporate governance in firms making directors designing more optimal compensation arrangements (Bebchuk et al., 2002).

One of the most important monitoring mechanisms is the role of the non-executive board including the independent remuneration committee. This corporate governance variable is predicted to limit excessive levels of pay – as there is more monitoring imposed on the behaviour of directors. The separate roles of the CEO and Chairman also facilitate good corporate governance. The reported results indicate positive relationship between CEOCHAIR and REMMV for both OLS and GMM estimation methods. The coefficients are somewhat large at 17.55% (OLS) and 18.19% (GMM). Our results contradict findings by Conyon and Murphy (2000) who state that if the role is combined, it is easier for one person to exert power and thus increase directors' compensation meaning that separate role and remuneration have negative relationship. If the role is separate, the compensation is higher for our dataset. Of course, this assumes no moderating effect of a remuneration committee.

The roles of audit and remuneration committees are viewed to be an important factor in determining corporate governance standards. The UK Corporate Governance Code provides clear recommendations on how these committees should be set and governed (FRC, 2012).The coefficient for RCOMP is negative indicating an inverse relationship between RCOMP under both estimation methods. The coefficients are also large reaching 32.10% for REMGP under the OLS method. Our results therefore suggest that increased monitoring will cause a decrease on the level of compensation. Our results differ from findings reported by Anderson and Bizjak (2003) who find little evidence supporting the view that the presence of a remuneration committee reduces remuneration levels.

Other important corporate governance variables which are essential to include in our model are proportion of non-executive and executive directors (NONINEDS and INDNEDS), which measure the composition of the board and thus independence. Our results indicate significant negative relationship between these two variables and dependent variables (see Table 4.1). Coefficients are very large under both estimation methods. The results contrast with those of

Ozkan (2007b) who establishes a positive association between non-executive directors and the level of compensation arguing that these directors lack efficiency in monitoring.

The main theoretical explanation which could be provided for our estimated results is based on the entrenchment hypothesis outlined by Fahlenbrach (2009) who states contrasting view of designing compensation packages, viewing it as not being effective in terms of solving the agency problem, but in contrast, creating an opportunity for directors to take advantage and set higher level of compensation for themselves. Therefore, our negative relationship can be explained by the fact that these firms tend to have strong corporate governance characteristics meaning that firms do not seek to create high-level compensation packages in order to align shareholders' interests with managers' actions. Our reported coefficients are higher for INDNEDS than they are for NONINEDS, suggesting that outside directors tend to exert greater control over the board of directors. That can be supported by an argument that if there are independent directors on the board, inside directors are likely to feel that they are being monitored and evaluated by outside directors meaning that they might tighten their control too (Mizruchi, 1983).

Board diversity is another extremely important factor which can be positively linked to shareholders' value and firm performance. Carter et al. (2003) emphasise the importance of diversified board as it is believed that the more diverse it is in terms of gender and race, more people can add to the firm (i.e. skills, experience and knowledge) thus increasing its total value and contributing towards shareholder value creation. Erhardt et al. (2003) also support this view by reporting a positive association between board diversity and financial performance of the firm. We find a positive link between proportion of female on the board (FEMALE) and the level of remuneration (see model 1,2, 4 and 5). Possibly greater diversity in board membership increases firm performance which in turn positively increases directors' compensation. The coefficients appear somewhat large for both estimation methods. Nielsen

and Huse (2010) find strong evidence that suggests that women generally have a positive effect on board effectiveness via mediators; they report that female directors reduce conflicts and increase developmental activities for the board in general. Farrell and Hersch (2005) also show that female board members tend to choose to serve on board of better-performing firms. However, they differ from those of Adams and Ferreira, (2009) who find insignificant results.

Taking our estimated results into account we can confirm that hypothesis (H_3) was supported by our findings. Most of the corporate governance variables which are used to measure the level of board monitoring act as a mean to control executives' compensation. Therefore, stronger board control will be associated with lower pay.

We also find a negative association between our dependent variables and percentage of directors' ownership (DIROWN), confirming our prediction stated in hypothesis (H_4). High block-holder ownership leads to a decrease in the level of compensation for most of our models. These results are in line with prior work (see Core et al., 1999; Ozkan, 2007; Ozkan, 2007b). So directors have power in influencing the level of compensation. Once they become shareholders themselves they have a greater interest in active monitoring firms' activities thus remuneration levels won't be set at previously high level. Another explanation is that according to Shleifer and Vishny (1986), larger shareholdings will resolve free rider problem, i.e. directors are motivated to monitor and improve governance of the firms.

Boyd (1994) finds that CEO compensation has an inverse relationship with board control. Our dependent variables involves not only total compensation for CEO but total pay for all executive directors and remuneration of top management is usually closely linked to each other therefore the effect of the strength of the board control on compensation for all executives' is likely to be similar.

Taking into account all corporate governance coefficients together, it can be concluded that overall corporate governance performance is strong across firms and that can be linked to the legal system under which they operate. These findings support our predicted hypothesis (H_3). As it was mentioned in the literature review, countries operating under common-law tend to have very strong protection of investors and thus have an impact on the level of corporate governance rules (see La Porta et al., 1998). Therefore, our findings can be supported by this theory and we would expect that directors of these firms are unlikely to benefit by extracting unreasonable compensation from the firm for themselves (Core et al., 1999).

Year Effects

The table also shows the importance of year effects. Our sample covered period of the global financial crisis and the coefficient for 2008 is also positive and significant. The results show that year effects are mostly significant where LNTOTREM is used as the dependent variable. The feature holds for both estimation methods. The coefficients for 2005 and 2006 are negative whereas, the coefficients are positive for other years where significant. It is expected that after financial crisis, the governance of firms would likely improve leading to lower remuneration given the experience of the financial crisis. However, we observe the opposite. Our estimated results can be supported by explanation provided by Adams (2012) who states that total compensation increases as the level of risk goes up and that could be the case in these companies.

That means that according to our results despite the fact that financial crisis caused a lot of negative effects on firms and corporate scandals revealed that some executives were paid large sumsof money, directors' level of compensation has still increased after year 2008. That could be explained by the fact that our remuneration variable aggregates different

components of remuneration meaning that even if the base pay has decreased directors might still have been awarded bonuses and other payments based on the level of performance too.

Overall, our results are generally in line with our predictions. To sum up our static findings, it can be said that we found strong and positive association between firm performance and directors' remuneration. In general, firm performance impact on the level of compensation (see also Coughlan and Schmidt, 1985) and good corporate governance would appear to have a moderating effect on pay. Stronger corporate governance mechanisms play an important role in reducing the agency problem in firms (Ozkan 2007b). What we are unable to show however, is whether the level of pay is too high or inadequate given the performance achieved by the firm. This is an area that can be explored in future work.

4.3 Dynamic Models

We extend our models by introducing lagged financial variables and two-lagged dependent variables as explanatory in order to investigate whether time effect has an impact on the relationship between total executives' remuneration and financial variables. Corporate governance variables remain the same in our dynamic models. It should be noted that because our models were reduced from general to simplified form, some lagged variables were eliminated based on high *p*-values. All general models included t-1 and t-2 for dependent variables, but t-2 variables were eliminated in our simplified versions of the models.

It is important to capture time effect as directors' contracts are usually revised over a certain period of time (Dittmann et al., 2010). As it has previously been mentioned, extending our model in this way is also vital as not that many studies consider multiple periods in their

models and mostly concentrate on static effects; therefore, we expect to find better estimated results for our pay-performance relationship as according to a theory past financial performance of the firm tends to have an immense impact on CEO levels of compensation (Murphy, 1985). For this particular empirical analysis we will be able to observe whether this theory will support this prediction for this particular dataset.

Edmans et al. (2012) indicate that lags of directors' compensation are likely to capture pay dynamic given also the variation in firm performance over time. We use one lag dependant and explanatory variables to capture this effect. Lag variables are likely to capture the extent to which executives' pay relates to long-term performance. Therefore, we believe that our dynamic models give us a better insight into analysis of the relationship between directors' pay and firm performance. We will also see whether corporate governance indicators coefficients will change if we introduce lagged variables on financial performance indicators. Inclusion of lagged dependent variable should also help to solve the problem of autocorrelation (Granger and Newbold, 1974) which was present in our static models.

4.3.1 Diagnostic tests for dynamic models

Following the same approach as in previous section, we firstly draw our attention to the diagnostic tests (see Table 4.2). Missing data have also had an effect on the number of observations in final dynamic models. Final number of observations included is generally slightly lower for all dynamic models than for static ones and that can be attributed to missing observations. We interpret these results in the same way as previous static diagnostics – the more reliable model is the one with the highest number of observations.

$\overline{R^2}$values are considerably higher for all dynamic models, ranging from 0.5566 to 0.7160. The highest reported$\overline{R^2}$ results are for the same models as for static results – 1 and 4, 0.7160 and

0.6728 respectively, allowing us to draw the same conclusion as before: better estimated models are those where the dependent variable is LNTOTREM. Reported standard errors are also the lowest for the same models when we run dynamic regressions as they are for static estimations; the values are 0.2922 and 0.2982 for models 3 and 6 respectively. The lowest AIC value is 0.3935 (model 3, same as static).

The Q-statistics test was not expected to be significant as we included lagged dependent and explanatory variables (see Granger and Newbold, 1974).We find that Q-statistics is insignificant for OLS model 3 and GMM models 5 and 6 (Table 4.2) in line with our prediction. Thus the coefficient estimates are consistently estimated as we cannot reject the null of no serial correlation. Under the OLS, model 2 and 3 exhibit significant autocorrelation at lag 2 but not at lag 4 according to Breusch-Godfrey Lagrange multiplier test.

The *F*-test for the Breusch-Pagan-Godfrey statistics (Breusch and Pagan, 1979) provides the same results as for previous static models – it is significant for all OLS models. The Jarque-Bera test also rejects the null hypothesis of normality. Models that exhibit non-normality in the residuals will likely also exhibit heteroscedasticity. So the rejection of the null in this cases is not surprising. Sargan test also rejects the null.

Overall, we can suggest that diagnostic test results for dynamic models were better. However, we should still take into account that our diagnostic tests suggest some estimation problems particularly with residual correlation meaning that we should exercise some caution when interpreting the reported coefficients in our estimated results.

4.3.2 Empirical results of dynamic models

Table 4.2 summarises reported coefficients of our estimated results for all dynamic models and this section will include detailed analysis of these results. The independent variables used in dynamic models were grouped in the same way in the table as they were for static coefficients: profitability, firm value, leverage, investment, corporate governance and year effect; however, dynamic models include two other extra sections - lagged dependent variables and taxation cash flow.

Our dynamic models differ from static setting only by inclusion of lagged explanatory variables and two-lagged dependent variables; therefore, in our discussion we will solely concentrate on highlighting similarities and differences.

Table 4.2: Determinants of executive directors' compensation, UK firms (dynamic), 2005-2011

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
C	1.5424[a]	3.9099[a]	0.9423[a]	1.3300[a]	3.2902[a]	1.1804[a]
	(0.1847)	(0.3746)	(0.1307)	(0.1655)	(0.5034)	(0.1755)
FEES	-	-	0.0240[a]	-	-	-
			(0.0073)			
LNTOTASSETS	0.3096[a]	-	0.2402[a]	0.2645[a]	-	0.3008[a]
	(0.0190)		(0.0292)	(0.0215)		(0.0574)
LNTOTASSETS(-1)	-0.1611[a]	-	-0.2478[a]	-0.1514[a]	-	-0.2577[a]
	(0.0138)		(0.0237)	(0.0184)		(0.0461)
Panel A: Lagged Dependent Variables						
LNTOTREM(-1)	0.5322[a]	-	-	0.5445[a]	-	-
	(0.0236)			(0.0376)		
REMGP(-1)	-	0.5405[a]	-	-	0.5396[a]	-
		(0.0245)			(0.0645)	
REMMV(-1)	-	-	0.5019[a]	-	-	0.5145[a]
			(0.0261)			(0.0679)
Panel B: Profitability						
GPM	-	-0.0075[a]	0.0011[b]	-	-0.0066[a]	0.0006
		(0.0015)	(0.0005)		(0.0020)	(0.0004)
LNEBIT	-	-0.2384[a]	0.0659[a]	-	-0.1958[a]	0.0896[a]
		(0.0461)	(0.0142)		(0.0535)	(0.0243)
LNEBIT(-1)	-	0.1678[a]	-	-	0.2174[a]	-
		(0.0425)			(0.0484)	
OPM	-	0.0188[a]	-	-	0.0194[a]	
		(0.0029)			(0.0045)	
REMUNNETINC	0.0695[b]	0.4555[a]	-	0.0957[b]	0.3248[a]	
	(0.0319)	(0.0776)		(0.0451)	(0.0873)	
ROE	-	-	-	-	-0.0002[a]	
					(0.0000)	
ROE(-1)	-	-	-	-0.0001[a]	-0.0001[a]	
				(0.0000)	(0.0000)	

Table 4.2cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Panel F: Cash Flow						
LNTAXCF(-1)	-	-	-	-	0.0156	-
					(0.0347)	
Panel G: Corporate Governance						
CEOCHAIR	0.1515[b]	-	0.1229[b]	-	0.0953	0.1022[b]
	(0.0598)		(0.0490)		(0.1549)	(0.0502)
DIROWN	-0.0046[a]	-	-	-	-	-
	(0.0010)					
FEMALE	0.2309[c]	-	-	0.3128[b]	-	-
	(0.1348)			(0.1579)		
INDNEDS	-0.7777[a]	-0.6668[a]	-0.3378[a]	-0.7260[a]	-0.5006[c]	-0.2988[b]
	(0.1209)	(0.2333)	(0.0764)	(0.1639)	(0.2863)	(0.1409)
MEETING	-0.1796[a]	-0.1779[a]	-	-	-	-
	(0.0273)	(0.0589)				
NONINEDS	-0.4983[a]	-	-	-0.5170[a]	-	-
	(0.1220)			(0.1824)		
Panel H: Year Effect						
Y2005	-0.0694[c]	-	-0.0388	-0.0693[b]	-	-0.0403[c]
	(0.0370)		(0.0262)	(0.0288)		(0.0243)
Y2006	-	-	-	-	-0.1443[a]	-
					(0.0539)	
Y2008	0.1758[a]	-	-	0.1482[a]	-	-
	(0.0359)			(0.0295)		
Y2009	0.0735[b]	-	-	-	-	-
	(0.0353)					
Y2010	0.0486	-	-	-	-	-
	(0.0352)					
Y2011	0.1929[a]	0.1970[b]	-	0.2215[a]	-	-
	(0.0396)	(0.0799)		(0.0448)		

Table 4.2 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Diagnostic						
N	1248	1072	1115	1376	1009	1120
$\overline{R}^2$	0.7160	0.5652	0.5962	0.6728	0.5566	0.5766
S.E.	0.3861	0.8266	0.2922	0.4174	0.7697	0.2982
AIC	0.9499[a]	2.4719	0.3935	-	-	-
Q-Stat	62.2570[a]	72.2320[a]	7.8876	112.9600[a]	4.0658	5.5201
Auto LM(2)	8.2184[a]	12.1646[a]	6.0663[a]	-	-	-
Auto LM(4)	8.2527[a]	1.6574	0.0000	-	-	-
F-statistic	6.4844[a]	6.7985[a]	9.5057[a]	-	-	-
Sargan Test	-	-	-	0.0000[a]	0.0000[a]	0.0000[a]
Jarque-Bera	1309.023[a]	29986.14[a]	191454.80[a]	1946.625[a]	29694.84[a]	204277.20[a]

Notes: Refer to Appendix A for definition of variables. Figures in round brackets are standard errors. [a, b, c] denotes that the coefficient is significant at the 1%, 5% and 10% level, respectively. N is number of observations. The S.E. stands for standard error. The AIC denotes Akaike Information criterion, measuring the goodness of fit of an estimated model. Q-Stat is checking for second-order autocorrelation in the residuals. Auto LM(2) and Auto LM(4) are Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags respectively. *F*-statistic stands for heteroskedasticity which is tested using Breusch-Pagan-Godfrey statistics. Sargan test analyses whether overidentifying instruments are uncorrelated with the error.

Firstly, we are going to concentrate on lagged dependent variables. It was hypothesised to find a positive association between current executive directors' compensation and lagged pay and we report positive (at 1% significance level) relationship between lagged dependent variables and current ones for both OLS and GMM estimation methods (see Panel A, Table 4.2). Coefficients, however, are quite high and indicate that 1% increase in our dependent variables in the previous period will contribute towards just above 50% increase in remuneration in current period for all OLS and GMM models. Our findings are consistent with previous research in an area; Doucouliagos et al. (2012a) also highlight the positive link between these two variables as it might take some time to adjust directors' pay and previous

years are usually taken into account to observe dynamic effects. These results support H_5, which proposed a positive relationship between current executives' remuneration and lagged pay.

By looking at LNTOTASSETS we also observe positive relationship between this variable and LNTOTREM and REMMV for both OLS and GMM estimation methods. The same results were observed in our static models and that was explained by the positive association between size of the firm and directors' level of remuneration supported by previous findings (e.g. Haynes et al., 2007). Reported coefficients are higher than for static models – we observe that for example 1% increase in LNTOTASSETS will be associated with 30.96% increase in LNTOTREM for OLS model. However, our lagged LNTOTREM shows a negative relationship (see Table 4.2 models 1,3,4 and 6) and that could be explained by the fact that size of the firm is likely to have an effect in current period rather than the previous one.

Profitability coefficients support our results reported in static findings. Both models are in line with our prediction stated in H_1 that firm performance is positively related to the level of compensation. Coefficients for dynamic models lie in the same range as values for static results. We observe that lagged LNEBIT(-1) is positively related to REMGP and we find that 1% increase in LNEBIT causes 16.78% (for OLS) and 21.74% (for GMM) increase in the dependent ratio. Coefficients for ROE(-1) are negative which contradicts our prediction. The magnitude, however, is very small as we observe only 0.01% increase in LNTOTREM and REMGP for GMM models if there is a 1% increase in ROE(-1). These results suggest that lagged financial performance is positively related to current executive pay, supporting H_6.

LNMV(-1) is positively and significantly related to dependent variables which supports Gabaix and Landier (2008) prediction which stated that remuneration may increase as a results of an increase in market value; and we expected to find this relation. TOBINQ(-1) is, however, negatively related to compensation.

Focusing on LIBASS and lagged LIBASS coefficients reported in Table 4.2 Panel D we can see that our results differ from static model in terms of sign and magnitude. The relationship between LIBASS and dependent variables for all models is reported to be significantly positive. However, the relationship between LNTOTDEBT and dependent variables (Model 1, 3 and 6 reported in Table 4.2) is negative and these estimated findings are consistent with theoretical literature regarding an association between debt and compensation. DEBTMV is also negative; however, DEBTMV(-1) has a positive association, even though we expected to find a negative relationship as short-term debt usually increases the quality of monitoring (Brockman et al., 2010).

Panel E (Table 4.2) reports only two investment variables used in our dynamic models – EPS and EPS(-1). The positive relationship between EPS and REMGP for GMM model is similar to the one reported in static model in terms of sign and magnitude. Dynamic model finds that 1% increase in EPS will cause 13.12% increase in remuneration over gross profit. Moreover, we find the same relationship for OLS model: REMGP increases by 14.64%. However, we observe a negative association between dependent variables and lagged EPS which contradicts theoretical background proposed by Bhattacharyya et al. (2008). However, the explanation for this could be that their empirical research takes into account retained earnings; however, we do not investigate whether these earnings are reinvested in the future or not.

We report only one lagged variable in Panel F. The relationship between lagged LNTAXCF and REMGP for GMM model is positive; however, it is not reported to be significant in this particular model.

Corporate governance variables in dynamic models are also associated with board composition, structure and monitoring and we will analyse each in turn. Starting with

CEOCHAIR we observe significant positive relationship with LNTOTREM and REMMV for OLS models and with REMMV for GMM model.

The relationship between CEOCHAIR and remuneration remains significant and positive for all models except model 5. This can also be supported by the fact that corporate governance characteristics are quite strong. Other corporate governance variables such as FEMALE, DIROWN, NONINEDS and INDNEDS have the same association with our dependent variables as static models; however, the magnitude of coefficients differs. We estimate that 1% increase in female directors on the board will contribute towards 23.09% and 31.28% increase in LNTOTREM for OLS and GMM models respectively, which is much lower than for static models. We also find that DIROWN variable is only significant for Model 1 and is also negatively related to LNTOTREM. Coefficients for NONINEDS and INDNEDS are also significant, negative and lower than the ones presented for static models. Our results indicate that for example 1% increase in NONINEDS and INDNEDS will cause 49.83% and 77.77% decrease in LNTOTREM for OLS model. These results can be explained using the same theoretical background which was proposed when we discussed static results. As Mizruchi (1983) reports higher monitoring will contribute towards a reduction in total compensation.

Therefore, we can conclude that our dynamic models also show that corporate governance mechanisms are quite strong and firms do not use remuneration as a main tool to control directors to tie their objectives with shareholders' interests. This can also be supported by the fact that following a few corporate scandals, many firms enhanced board monitoring by introducing stricter requirements and these have caused significant reductions in CEO compensation (Chhaochharia and Grinstein, 2009); therefore, we should expect to see a negative association between corporate governance variables and directors' remuneration.

Our final reduced version of dynamic model (Table 4.2, Model 1) also reports MEETING to be significant. This variable is negatively associated with directors' compensation for models 1

and 2. We report that 1% increase in this ratio will cause 17.96% decrease in LNTOTREM and 17.79% decrease in REMGP. As this variable includes both executive and non-executive directors showing that the higher the ratio, the better the level of monitoring in a firm providing a stronger corporate governance mechanism. Inside ownership (DIROWN) has also a negative significant coefficient for model 1 indicating stronger monitoring mechanism for the firm.

Overall it can be said that dynamic models also confirm our previous findings when we described static models suggesting that corporate governance determinants indicate strong governance structure and it tends to have a negative effect on the total level of compensation, which support findings by Core et al. (1999) which found that firms with weak corporate governance performance tend to worsen the agency problem meaning that directors' compensation tends to be much higher and not reflecting actual performance of the firm. We had also observed a link between firm performance and corporate governance in both sets of models (i.e. the better the financial performance of the firm, the higher CEO compensation is likely to be); this point could also be argued form another perspective: as Dittmann et al. (2010) outline that firms with strong corporate governance mechanisms (and that is what is observed regarding UK companies) tend to attract directors' with better knowledge and skills who would potentially demand higher waged thus also, in turn, affect corporate governance characteristics in a positive way.

Both static and dynamic estimated models have demonstrated that more compliant boards, increased director's ownership will contribute towards greater and more active monitoring, however, some scholars have reported different results and argue that in most UK firms directors act more as advisors rather than active monitors (Franks et al., 2001).

Year effect shows the same tendency in terms of relationship with directors' compensation. Our estimated coefficients are negatively related to dependent variables before the financial

crisis took place and from 2008 onwards the relationship became positive. We therefore conclude that year effects for both, static and dynamic estimated models follow the same tendency.

4.4 Conclusion

This empirical chapter analysed the relationship between directors' compensation and firm performance and corporate governance mechanisms. The main contribution of this empirical chapter is that we have introduced dynamic model and thus allowing us to compare these results with those produced by static estimation methods. It was observed that lagged variables play an important role in determining the level of compensation and managers are likely to be rewarded for their achievements after certain amount of time has elapsed.

We have also observed the importance of legal system under which firms operate; combined together with our reported coefficients as well as being supported by previous empirical finding regarding the effect of legal rules on corporate governance structure we can conclude that corporate governance mechanisms employed by UK firms tend to align the interests between directors and shareholders; meaning that directors' compensation is likely to be an incentive driven and reflect true performance of the firm.

It can also be concluded that firms with strong corporate governance characteristics are likely to attract high paid executives who would increase financial performance of the firm as well as benefit from rewards as we consider multiple periods; meaning that factors work well together in combination.

It is also important to consider the significance of our results and what potential implications these might have for various parties (i.e. policy-makers, practitioners, regulators, managers, etc.) Drawing a conclusion that remuneration is closely related to firm performance, it might

become clearer for practitioners should use remuneration as an incentive, link it with directors' performance and develop more effective incentive schemes.

These results can also serve as an example for other countries too. Of course, there is no one standard corporate governance practice for all countries and firms as we need to consider differences in culture, background, etc. but based on various cultural environments, other countries can improve their Code of Practice taking into account specific features of each country.

Chapter 5 Spanish Remuneration Levels and Corporate Governance

5.1 Introduction

This chapter concentrates on the analysis of executive directors' pay and firm performance for Spanish companies. Having employed panel data for 31 firms for the period 2005-2011 we examine our models and test this relationship, following exactly the same steps as in previous chapter when analysing the UK firms.

The analysis of this chapter is split into two main sections. First, we look at the static model for both the OLS and GMM estimations. Whilst the OLS estimation may be insightful, the parameter estimates may be unreliable due to the presence of residual autocorrelation. The use of lagged variables may not eliminate this entirely. Non-normality in the residuals may also lead to estimation inefficiency. GMM estimator is particularly useful for an analysis if both heteroskedasticity and residual correlation are present (Baum et al., 2003). We use three dependent variables for each estimation method as discussed in Chapter 3 – LNTOTREM, REMGP and REMMV. Second, we capture lagged effects in our models such that we have a dynamic model. Both sections will begin with the discussion of the diagnostic tests results. A conclusion will summarise main findings. Please see Appendix A for variables explanation and abbreviations to which we will be referring.

We find that dynamic adjustments play an essential role in determining executives' pay. Overall our results suggest that once dynamic effect is captured, we tend to find stronger relationship between directors' pay and firm performance and that is confirmed by diagnostic tests results which indicate that dynamic estimates resolve the problem of autocorrelation in the residuals.

As we use general to specific methodology and move from general to simplified models in our analysis, we end up with slightly different estimated models for UK and Spain. The objective of this research is to test set hypotheses for each country separately and then discuss whether there are similarities or differences in the findings given various backgrounds for these countries. It might seem that comparison is not possible as we end up with different models. However, the developed hypotheses to test for the relationship between remuneration and firm performance and corporate governance variables are set on a broader context and do not specify explicitly what particular variable we expect remuneration to be related to. That means that all static and dynamic models for both countries contain variables which are used to measure firm performance and corporate governance, which helps identifying the nature of the relationship and draw indicative conclusions regarding certain differences and similarities between these two countries used in this research. As earlier mentioned, previous studies have incorporated different variable to measure firm performance and corporate governance control mechanisms, our final results contain variables which can be used to measure both.

5.2 Static Models

We begin our empirical analysis by focusing on the relationship between total directors' remuneration and firm performance and corporate governance variables using our static model. Firstly, looking at the diagnostic tests and then analysing the estimated coefficients.

5.2.1. Diagnostic tests for static models

The diagnostic tests are shown in Table 5.1. These tests allow us to establish the level of confidence we can place in our parameter estimates.

As our datasets contained a large number of variables with missing values, that had a considerable effect on final number of observations in models. We consider the most reliable model to be the one with the highest number of observations – model 3.

$\overline{R^2}$is used to test the goodness of fit of the model. $\overline{R^2}$value line within similar range for both OLS and GMM estimation methods; the highest value being 0.8033 for model 4, meaning that it explains higher percentage of variation in the data. As $\overline{R^2}$ values are not considerably higher for GMM models, it suggests that the explanatory power is relatively the same.

We followed exactly the same approach (described in Chapter 3) regarding our final model estimation which was applied in previous empirical chapter when analysing the UK companies. The final model was specified using the same approach as described by Pagan (1987); therefore, we look to minimise the standard error (SER) and the Akaike Information Criterion (AIC). The lower the standard error, the better the estimate is and for static models these would be model 3 (OLS) and model 6 (GMM) taking the values of 0.0010 and 0.0091 respectively. Based on the AIC, model 2 with the value of -0.7751 can be considered to be the best one as it is the lowest.

To check for second-order autocorrelation in the residuals the Q-statistics test is applied. Only one coefficient is found to be significant so that the null of residual correlation can be rejected for model 3. These results are supported by the Breusch-Godfrey serial correlation Lagrange multiplier test using up to 2 and 4 lags.

The reported *F*-statistics (Breusch and Pagan, 1979) is significant at 1-percent level for models 2 and 3 (Table 5.1), in other words the null hypothesis of no heteroskedasticity can be rejected at 1-percent significance level. We find that Jarque-Bera test for non-normality also rejects the null (at 1-percent level) for OLS models 2 and 3 (and also for GMM models 5 and 6). Sargan test accepts the null of no correlation between instruments and errors for models 4 and 6.

Overall, static models 1 and 4 perform best in terms of our diagnostic tests. However, we interpret the parameters of the remaining models with some caution since they have failed the diagnostic tests. It would be expected that dynamic models will perform better in terms of diagnostic tests as lagged variables help solving the problem of autocorrelation in the residuals.

5.2.2 Empirical results for static models

Once it was identified how reliable our estimates are we refer to Table 5.1 which summarises results for static OLS and GMM models. We follow the same format in our discussion as in previous Chapter 4 by grouping the coefficients into the same broad categories: profitability, firm value, leverage, investment, cash flow, corporate governance and year effect.

Our results will be analysed and compared to previous empirical findings. It is important to note that various studies' results differ substantially due to different methods of data collection, analysis techniques, samples, etc. (Tosi et al., 2000). It is also the case that most empirical studies concentrated on UK and US firms mainly. Therefore we are going to compare our results with ones reported earlier bearing in mind that findings also could have potentially be affected by the type of law adopted in a specific country. As it has previously been mentioned Spanish civil law is considered to be different from and UK and US

economies which have common law, we might observe difference in certain results reported. Also other broader aspects such as nation's culture and social norms will have an effect on difference between these two countries.

Firm Size

Firm size expressed as natural logarithm of total assets can be an important determinant of executive directors' level of remuneration. Many previous studies confirmed this relationship (Conyon and Murphy, 2000) and our study supported this positive relationship for the UK firms earlier. As it was stated, the larger the size of the firm, the higher the level of compensation for directors is likely to be. The reported coefficients suggest that 1% increase in LNTOTASSETS is associated with 0.57% and 0.99% increase in total executives' remuneration (at 1-percent significance level) over market value for OLS and GMM models respectively. The relationship between LNTOTASSETS and REMGP for GMM model 5 is, however, negative at 10-percent level. This finding is not in line with previous research.

Table 5.1: Determinants of executive directors' compensation, Spanish firms (static), 2005-2011

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
C	-	-	-	-	0.8824[b]	-
					(0.3972)	
FEES	-	0.0199	-	-	-	0.0017[b]
		(0.0237)				(0.0007)
LNTOTASSETS	-	-	0.0057[a]	-	-0.1152[c]	0.0099[a]
			(0.0017)		(0.0582)	(0.0032)
Panel A: Profitability						
GPM	0.0473[b]	-0.0025[b]	-	0.0497[b]	-0.0041[a]	-
	(0.0223)	(0.0012)		(0.0190)	(0.0012)	
LNEBIT	1.0977[c]	-	-	-	0.1255[b]	-
	(0.6384)				(0.0504)	
OPM	-	-	0.0002[b]	-	-	-
			(0.0001)			
REMUNNETINC	305.3020[a]	23.1311[a]	0.1049	311.0698[a]	23.0248[a]	-
	(45.1850)	(1.7345)	(0.0704)	(38.3203)	(2.9081)	
ROA	-0.5255[b]	-	-0.0017[a]	-0.6340[a]	-0.0087[c]	-
	(0.2580)		(0.0006)	(0.2243)	(0.0050)	
ROCE	0.3438[b]	-	0.0010[a]	0.4674[a]	-	-
	(0.1567)		(0.0003)	(0.1438)		
ROE	-0.1430[a]	-	-	-0.1187[c]	-	-
	(0.0448)			(0.0611)		
Panel B: Firm Value						
LNMV	-	0.0375[a]	-0.0102[a]	-	0.0323[a]	-0.0131[a]
		(0.0102)	(0.0013)		(0.0106)	(0.0037)
NCFMV	-	-	-0.0693[a]	-	-	-0.0838[b]
			(0.0146)			(0.0323)
TOBINQ	-	-	0.0001[a]	-	-	0.0002[a]
			(0.0000)			(0.0001)

Table 5.1 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Leverage						
DEBTMV	-	-	0.0134[b]	-	-	0.1990[a]
			(0.0067)			(0.0611)
LIBASS	-6.5345[b]	-	-	-8.1865[a]	-	-
	(3.1801)			(3.0246)		
LNSTDEBTLTDEBT	-	-0.0265[b]	-	-	-0.0286[a]	-
		(0.0107)			(0.0087)	
LNTOTDEBT	-	-	-	0.7593[b]	-	-
				(0.3733)		
LTDEBTMV	-	-	-	-1.8516[b]	-	-0.2583[a]
				(0.8442)		(0.0964)
LTDEBTTOTASS	-	-	0.0135	-	-	0.0211[b]
			(0.0072)			(0.0088)
Panel D: Earnings and Distribution						
DY	0.5602[a]	-	-	0.5136[b]	-	-
	(0.1809)			(0.2313)		
EPS	-	0.0261[a]	-	-	0.0303[a]	-0.0012[a]
		(0.0059)			(0.0079)	(0.0004)
Panel E: Cash Flow						
LNTAXCF	-0.2881	-0.0279[c]	0.0055[a]	0.0004	-0.0706[a]	0.0047[a]
	(0.7040)	(0.0152)	(0.0015)	(0.5451)	(0.0249)	(0.0016)
Panel F: Corporate Governance						
ACOMP	-	0.1086[b]	-	-	0.1553[a]	-
		(0.0484)			(0.0586)	
CEOCHAIR	-	-0.1359[a]	-	-	-0.1082[b]	-
		(0.0424)			(0.0460)	
COMP	-	0.1020[b]	-	-	0.1299[a]	-
		(0.0456)			(0.0488)	
DIROWN	-	-0.4321[a]	-	-	-0.4475[a]	-0.0069
		(0.1234)			(0.1323)	(0.0052)

Table 5.1 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Panel F: Corporate Governance						
FEMALE	-18.0225[a]	-0.4956[b]	-0.0271[c]	-16.6050[a]	-0.6582[b]	-
	(6.4760)	(0.2478)	(0.0152)	(5.8292)	(0.2765)	
INDNEDS	-	-	0.0242[c]	-	-	0.0265[b]
			(0.0135)			(0.0118)
MEETING	-3.0528[b]	0.0033	-	-2.7500[b]	-0.0379	-
	(1.4866)	(0.0465)		(1.2911)	(0.0393)	
NONINEDS	-	-	0.0282[a]	-	-	0.0233[c]
			(0.0106)			(0.0120)
SIZE	2.8758[b]	-	0.0082[a]	2.8226[b]	-	0.0096[b]
	(1.1910)		(0.0024)	(1.1689)		(0.0036)
Panel G: Year Effect						
Y2005	5.3935[a]	-	0.0076[c]	5.0899[b]	-	-
	(1.9807)		(0.0040)	(2.1151)		
Y2006	4.6939[a]	-	-	3.7012[c]	-	0.0077[c]
	(1.5528)			(1.9121)		(0.0039)
Y2008	-9.1076[a]	-	-	-9.6223[a]	-	-
	(1.3830)			(1.3116)		
Y2009	-5.4268[a]	-	-	-6.1400[a]	-	-
	(1.3426)			(1.7560)		
Y2010	2.9223[b]	-	0.0080[a]	2.1364[c]	-	0.0071[a]
	(1.3693)		(0.0027)	(1.1534)		(0.0023)
Y2011	-	-	0.0059[c]	-	-	0.0037[b]
			(0.0032)			(0.0018)

Table 5.1 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Diagnostic						
N	80	75	104	81	82	88
$\overline{R}^2$	0.7989	0.7801	0.6879	0.8033	0.7584	0.7161
S.E.	3.6404	0.1519	0.0010	3.6197	0.1665	0.0091
AIC	5.6082	-0.7751	-6.2259	-	-	-
Q-Stat	0.0692	1.6643	32.9770[a]	1.6130	0.1426	1.6654
Auto LM(2)	0.1395	1.3066	7.6445[a]	-	-	-
Auto LM(4)	1.2471	1.2858	7.5345[a]	-	-	-
F-statistic	0.9473	3.7110[a]	4.2342[a]	-	-	-
Sargan Test	-	-	-	2.0961	0.0000[a]	0.2847
Jarque-Bera	0.9574	31.0254[a]	71.9015[a]	1.3578	108.1698[a]	132.5941[a]

Notes: Refer to Appendix A for definition of variables. Figures in round brackets are standard errors. [a, b, c] denotes that the coefficient is significant at the 1%, 5% and 10% level, respectively. N is number of observations. The S.E. stands for standard error. The AIC denotes Akaike Information criterion, measuring the goodness of fit of an estimated model. Q-Stat is checking for second-order autocorrelation in the residuals. Auto LM(2) and Auto LM(4) are Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags respectively. *F*-statistic stands for heteroskedasticity which is tested using Breusch-Pagan-Godfrey statistics. Sargan test analyses whether overidentifying instruments are uncorrelated with the error.

Profitability

Panel A summarises the results between variables which measure profitability and directors' pay. We find that executive directors' compensation is sensitive to profitability of companies, especially accounting ratios, which supports previous findings (see Tosi et al., 2000) as well as our estimated results for the UK. This is in line with arguments regarding solutions for the agency problem meaning that contracts are designed in way to motivate directors and are based on the firm's performance. Some coefficients, however, have a negative sign, although the magnitude is not very large (i.e. we find that if GPM increases by 1%, REMGP will decrease by 0.25% and 0.41% for OLS and GMM models respectively).

Generally, these results are in line with our predicted hypothesis (H_1) meaning that owners reward directors who provide positive returns on investments. Taking into account principal-agent considerations, these results imply that the optimally designed contracts for directors (usually tied to firm performance) are likely to decrease the agency problem (Jensen and Murphy, 1990). Therefore, any alterations in executive directors' compensation could potentially be explained by changes in shareholders wealth, i.e. positive changes in financial variables are likely to cause an increase in directors' pay.

Firm Value

Positive and significant relationship is found between DEBTMV and REMMV for both OLS and GMM models. Also, LNMV is positively related to REMGP. It is reported that 1% increase in LNMV will contribute towards 3.75% and 3.23% in REMGP for OLS and GMM models respectively. Gabaix and Landier (2008) state in their research that it could be the case that increasing directors' compensation contracts do not reflect the actual agency problem, but are affected by increasing firm value meaning that we would expect to find a positive

association between market value and compensation without directors' extracting money for their own interest. It was predicted that market value of a firm is positively related to executives' remuneration (H_2) and our results confirm this.

However, some coefficients have a negative significant value and that could be caused by capturing the effect of underinvestment.

Smith and Watts (1992) emphasise that firms with larger growth opportunities are very likely to have higher compensation rates as it becomes more challenging to monitor actions of managers; which is also supported by Ozkan (2007) who states that a positive association between growth opportunity and directors' compensation reflect a higher demand for managerial skills and higher compensation arrangements indicate a reward for those high skills. One of the measures which are used to indicate growth opportunity is Tobin's Q and our reported findings suggest that there is a positive significant relationship at 1% significant level between REMMV and Tobin's Q although the magnitude of these coefficients is very small – 0.01% and 0.02% increase in REMMV if Tobin's Q goes up by 1% for models 3 and 6.

Leverage

Panel E summarises the next set of results; coefficients are negative and significant for LIBASS and LNSTDEBTLTDEBT. This is in line with findings by Kabir et al. (2013) who reports that the higher the debt of a firm causes directors' compensation to decrease so that firms have funds to meet their debt obligations. Positive and significant relationship is found between DEBTMV and REMMV for both OLS and GMM models. We also report that LNTOTDEBT and LTDEBTTOTASS are positively related to pay. Both of these variables include long-term debt and the presence of long-term debt does not lead to the creation of

optimal contracts as it is easier for creditors to monitor if there are short-term debt arrangements (Brockman et al., 2010).

Earnings and Distribution

Coefficients reported in Panel D for DY and EPS are significant and positive (apart from EPS model 6). The positive association between DY and remuneration indicates that management of firms can be described as "low-quality" as according to Bhattacharyya et al. (2008) high-quality management will reinvest returns rather than increasing that payment of dividend. Therefore, this can be attributed to differences in corporate governance controls, the ability of managers to extract money from firms in their own self-interest and investor protection between countries which have different law origins. We observed the opposite association between these two variables for the UK firms.

Some academic literature, however, examines this relationship and finds that larger firms tend to have higher dividend yield which in turn has a positive effect on compensation packs (Smith and Watts, 1992; Murphy, 1985).

Corporate Governance

Panel F summarises the results for corporate governance variables. It can be observed that there are quite a few differences in terms if signs and magnitudes of the coefficients between the UK and Spain. That can be attributed to the way corporate governance controls are being enforced in these two countries and the development if institutions.

CEO and Chairman roles in a firm are of great importance for determining firm's monitoring mechanisms. It is stated by Conyon and Murphy (2000) that combined role tends to increase directors' compensation due to influence on the board and remuneration committee. Our

findings are consistent with this prediction and we observe negative significant relationship between separate role and REMGP for both OLS and GMM models indicating efficient monitoring. Coefficients are large and are 13.59% and 10.82% for OLS and GMM models respectively.

An interesting result can be observed for ACOMP coefficient; we would expect to see negative association as more complied committees will exert greater monitoring; however, this is not the case for our dataset. This can be explained by an argument provided by Hermalin and Weisbach (2012) who state that an increased monitoring may cause inconvenience for directors as it requires extra work so that they demand higher compensation.

FEMALE is negatively associated with pay and this supports previous research which analysed the effect of diversified boards in terms of race, gender etc. (Carter et al., 2003). As it is well known in academia, the more diversified board can bring more in terms of adding value to a firm it can also be argued that monitoring increases. We find that if proportion of female directors goes up, the remuneration levels fall i.e. greater exerted monitoring. In contrast to these results, Adams and Ferreira (2009) have not found any significant results.

Another corporate governance variable, which is significantly and negatively related to the level of compensation, is MEETING. A negative sign tends to be consistent with the mixed academic evidence regarding monitoring of firms (Core et al. 1999) implying that outside directors may monitor firm better than executive directors thus leading to a decrease in total pay (as this variable includes both inside and outside directors). The magnitude of the coefficient is higher for LNTOTREM indicating that greater monitoring has a direct impact on total pay rather than on the ratio.

Compliance of board size with recommendations (SIZE) is positively related to directors' pay. Magnitudes of coefficients for LNTOTREM for both OLS and GMM models are quite high, suggesting that increase in board compliance still leads to an increase in directors' remuneration.

We also report positive relationship between remuneration and INDNEDS as well as NONINEDS. Our results are only significant for REMMV. These results suggest that the higher the number of members on the board, the monitoring process is likely to be less efficient. The same association was found by Ozkan (2007b). This finding contradicts the hypothesis that larger number of independent directors reduces the agency conflict by monitoring firm in an efficient way and improving corporate governance mechanism.

We observe that increase in directors' ownership (DIROWN) is associated with a decrease in remuneration and these results tend to be significant for OLS and GMM models at 5% and 10% significance level accordingly where our dependent variable is REMGP. Our findings are consistent with results outlined by Core et al. (1999) and Ozkan (2007) which also report a decrease in the amount of compensation as ownership rises and explain this by the fact that as managerial ownership increases, their interests become aligned with shareholders' objective, providing more monitoring thus partially reducing the agency problem. This finding is in line with the estimated results for UK firms and supports H_4.

Most corporate governance variables measuring board control and monitoring in our estimated model for Spain are positively associated with executive directors' remuneration. These results are in line with those reported by Tosi et al.(1997) who also report a positive relationship. As it was discussed in the literature review, authors explain their result using an argument that just monitoring might not be enough to control directors' remuneration. Hypothesis which states that compensation is inversely related to levels of board monitoring (H_3) is not supported by this particular set of results.

This can also be explained by an argument that greater monitoring requires extra effort meaning that directors will demand higher wages (Hermalin and Weisbach, 2012). This is not what we predicted as we hypothesised that greater monitoring should lead to a decrease in pay. These differences are quite substantial between UK and Spanish firms. Our results imply that legal origin of the country is likely to have an effect on the way corporate governance mechanisms are structured.

Year Effect

Panel G displays results for year effects. It demonstrates that after the financial crisis took place in 2008, it had a negative effect on remuneration for two consecutive years. Coefficients are negative and significant at 1-percent level for models 1 and 4. It clearly shows that once corporate scandals have raised issues of directors possibly paying themselves large sum of money which are extracted from firm profits, the monitoring has increased which had a negative effect on the total level of pay. After the year 2009, year effects are positively related to remuneration. That could be explained by the fact that directors could receive large bonuses. We can also link it to the argument regarding the extra work needed to be done to increase control (Hermalin and Weisbach, 2012).

These results contradict our previous findings for the UK which showed that year effects had opposite effects on the level of remuneration.

5.3 Dynamic Models

Now we move on to investigate dynamics in directors' pay by looking at the association between executives' pay and lagged firm performance. The main reason for capturing time effect is a theory suggesting that past performance of the firm has a crucial impact on efficient directors' compensation (Murphy, 1985). Hence in this study we try to predict what effect lagged financial variables may have on remuneration for Spanish firms.

As discussed in methodology we introduce lagged financial (t-1) and dependent variables (t-1 and t-2) as explanatory in both models. It should also be noted that following general to specific methodology we end up with some lagged variables being removed, therefore in our simplified version of the models some variables as t-1 and some as t-2.

5.3.1 Diagnostic tests for dynamic models

Diagnostic tests results are summarised in Table 5.2. The total number of observations in estimated models has not improved showing that missing values affect our final estimates. $\overline{R^2}$ values lie in the same range as for static models, the lowest value being 0.7333 (model 1) and highest value – 0.8116 (model 5).

The lowest standard error coefficients are for the same models as for static one; however, they are slightly higher – 0.0098 and 0.0097 for models 3 and 6 respectively. The lowest AIC is -0.9317 for model 2 (same as static).

It can be observed that all OLS dynamic models are free from second-order autocorrelation as coefficients are insignificant; it is also in line with those of the Breusch-Godfrey serial correlation Lagrange multiplier test using up to 2 and 4 lags. The *F*-test for the Breusch-Pagan-Godfrey statistics is insignificant for all OLS estimates meaning that there is no heteroskedasticity. Sargan test accepts the null of no correlation for all three GMM models.

The Jarque-Bera test, however, fails for all models except model 1 as coefficients are significant meaning that we reject the null hypothesis of normality.

It is, therefore, possible to conclude that dynamic estimate perform better in term of diagnostic tests results. We now move on to analyse the estimated coefficients reported in Table 5.2.

Table 5.2: Determinants of executive directors' compensation, Spanish firms (dynamic), 2005-2011

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
LNTOTASSETS	1.4399[a]	-	0.0121[a]	-	0.1086[b]	0.0172[a]
	(0.3547)		(0.0028)		(0.0418)	(0.0059)
LNTOTASSETS(-1)	-	-	-	-0.8759[a]	-0.2126[a]	-0.0090[b]
				(0.3056)	(0.0544)	(0.0036)
Panel A: Lagged Dependent Variables						
LNTOTREM(-2)	0.0078	-	-	-	-	-
	(0.0731)					
REMGP(-2)	-	-0.0203[a]	-	-	-0.0223[a]	-
		(0.0045)			(0.0022)	
REMMV(-1)	-		-	-	-	0.3133[a]
						(0.0622)
Panel B: Profitability						
GPM	-	-0.0029[b]	-	-	-	-
		(0.0012)				
GPM(-1)	-0.1294[a]	-0.0043[a]	-0.0003[a]	-	-0.0030[a]	-0.0003[a]
	(0.0377)	(0.0015)	(0.0001)		(0.0010)	(0.0001)
LNEBIT	-	-	-	2.9262[a]	-	-
				(0.6385)		
LNEBIT(-1)	-	-	0.0035[c]	-	-	0.0051[b]
			(0.0020)			(0.0020)
OPM	-	-	0.0009[a]	-	0.0035[c]	0.0007[a]
			(0.0001)		(0.0019)	(0.0002)
OPM(-1)	0.1988[a]	0.0096[a]	-	-	-	-
	(0.0536)	(0.0021)				
REMUNNETINC	331.8813[a]	20.6755[a]	0.4655[a]	317.8569[a]	22.6073[a]	0.4914[a]
	(43.2604)	(1.8518)	(0.1336)	(42.6787)	(2.1441)	(0.1454)
REMUNNETINC(-1)	-	-	0.2026[b]	-	-	0.2430[a]
			(0.0840)			(0.0828)
ROA	-0.5126[a]	-0.0111[c]	-0.0017[a]	-0.3454[a]	-0.0223[b]	-0.0025[a]
	(0.0966)	(0.0056)	(0.0006)	(0.1119)	(0.0098)	(0.0008)

Table 5.2 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Profitability						
ROCE(-1)	0.3609[a]	0.0255[a]	-	-	0.0189[b]	-
	(0.0986)	(0.0060)			(0.0078)	
ROE	-	0.0073[a]	0.0003[c]	-	0.0082[a]	0.0005[b]
		(0.0019)	(0.0002)		(0.0024)	(0.0002)
ROE(-1)	-	-0.0190[a]	-	-	-0.0176[a]	-
		(0.0028)			(0.0034)	
Panel C: Firm Value						
LNMV	-	0.0286[a]	-0.0061[a]	-	-	-0.0057[a]
		(0.0076)	(0.0014)			(0.0018)
NCFMV	-	-	-0.0629[a]	-	-	-
			(0.0177)			
NCFMV(-1)	-	0.2495[a]	-	-3.8360[a]	-	-
		(0.0793)		(1.4050)		
TOBINQ	-0.0244[b]	-	-	-	0.0012[a]	-
	(0.0098)				(0.0004)	
TOBINQ(-1)	0.0278[a]	-	-	0.0168[b]	-	0.0001[a]
	(0.0090)			(0.0077)		(0.0000)
Panel D: Leverage						
DEBTMV	0.0356	-	0.1500[a]	-	-	0.1875[a]
	(0.8250)		(0.0425)			(0.0381)
DEBTMV(-1)	-	-	-0.1407[a]	-	-1.0185[a]	-0.1935[a]
			(0.0388)		(0.2959)	(0.0516)
LIBASS(-1)	-	-	-	-	0.2370[b]	-
					(0.0904)	
LNSTDEBTLTDEBT(-1)	-	-	0.0035[a]	-	-	0.0047[a]
			(0.0012)			(0.0016)
LNTOTDEBT	-	-	-0.0108[a]	-1.0834[a]	-0.0826[b]	-0.0159[a]
			(0.0025)	(0.3872)	(0.0366)	(0.0049)
LNTOTDEBT(-1)	-1.4049[a]	-	-0.0066[a]	-	0.1761[a]	-
	(0.3644)		(0.0019)		(0.0514)	

Table 5.2 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Panel D: Leverage						
LTDEBTMV	-	-	-0.1496[a]	-	-	-0.2175[a]
			(0.0508)			(0.0419)
LTDEBTMV(-1)	-	-	0.1602[a]	-	1.2787[a]	0.2187[a]
			(0.0438)		(0.3548)	(0.0574)
LTDEBTTOTASS(-1)	-	0.2477[c]	-	-	-	-
		(0.1469)				
Panel E: Earnings and Distribution						
DY	-	-	-0.0014[a]	-	-	-0.0013[a]
			(0.0004)			(0.0005)
EPS(-1)	-	0.0518[a]	-	-	0.0538[a]	-
		(0.0071)			(0.0050)	
Panel F: Cash Flow						
LNTAXCF	-	-0.0465[a]	0.0077[a]	-	0.0144	0.0065[a]
		(0.0112)	(0.0020)		(0.0280)	(0.0022)
Panel G: Corporate Governance						
ACOMP	3.4456[a]	-	-	2.2866[b]	-	-
	(1.1995)			(0.8846)		
COMP	-	-	-0.0094[a]	-	0.1305[a]	-
			(0.0030)		(0.0364)	
DIROWN	-	-	-	-	-0.3115[a]	-
					(0.0790)	
FEMALE	-	-	-	-8.2649[b]	-	-
				(3.4715)		
MEETING	-0.3340	-0.0957[c]	0.0063[c]	0.1225	0.0079	0.0071[b]
	(1.2854)	(0.0511)	(0.0034)	(0.7599)	(0.0354)	(0.0029)
RCOMP	-2.1163[c]	0.0734[c]	-	-1.7610[c]	-	-0.0051[c]
	(1.1705)	(0.0373)		(0.9309)		(0.0027)
SIZE	-	0.0776[c]	-	-	-	-
		(0.0424)				

Table 5.2 cont.

	OLS Estimation			GMM Estimation		
	Dependent Variables:			*Dependent Variables:*		
	LNTOTREM	REMGP	REMMV	LNTOTREM	REMGP	REMMV
	(1)	(2)	(3)	(4)	(5)	(6)
Panel H: Year Effect						
Y2005	10.4752[a]	-	-	5.1185[a]	-	-
	(2.1767)			(1.5710)		
Y2006	10.5526[a]	-	-	4.1567[a]	-	-
	(1.3949)			(1.4179)		
Y2008	-	-	-	-8.4242[a]	-	0.0047[c]
				(1.3239)		(0.0027)
Y2009	-	-	-	-4.4012[b]	-	-
				(1.7211)		
Y2010	9.2161[a]	-	0.0148[a]	3.6895[a]	-	0.0143[a]
	(1.3658)		(0.0036)	(1.3576)		(0.0041)
Diagnostic						
N	83	78	81	86	78	80
$\overline{R}^2$	0.7333	0.7932	0.7825	0.8009	0.8116	0.7953
S.E.	4.1310	0.1381	0.0098	3.5115	0.1364	0.0097
AIC	5.8554	-0.9317	-6.1873	-	-	-
Q-Stat	2.0508	0.3267	6.3794	3.0685	0.4483	14.3900[a]
Auto LM(2)	1.7659	0.9434	1.1315	-	-	-
Auto LM(4)	1.1635	0.6238	1.0037	-	-	-
F-statistic	1.3588	1.0089	1.4931	-	-	-
Sargan Test	-	-	-	1.0887	0.0455	0.0402
Jarque-Bera	1.6022	13.0260[a]	37.7818[a]	14.9776[a]	16.6694[a]	49.7844[a]

Notes: Refer to Appendix A for definition of variables. Figures in round brackets are standard errors. [a, b, c] denotes that the coefficient is significant at the 1%, 5% and 10% level, respectively. N is number of observations. The S.E. stands for standard error. The AIC denotes Akaike Information Criterion, measuring the goodness of fit of an estimated model. Q-Stat is checking for second-order autocorrelation in the residuals. Auto LM(2) and Auto LM(4) are Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags respectively. *F*-statistic stands for heteroskedasticity which is tested using Breusch-Pagan-Godfrey statistics. Sargan test analyses whether overidentifying instruments are uncorrelated with the error.

5.3.2 Empirical results for dynamic models

This section will concentrate on highlighting main differences and similarities between static and dynamic models.

Firstly, we will draw our attention to lagged dependent variables. We predicted (H_5) that lagged executive directors' pay will have a positive relationship with remuneration. It is reported that this relationship holds for LNTOTREM(-2) and REMMV(-1) supporting the hypothesis and being consistent with previous empirical results reported by Doucouliagos et al. (2012a).

Size of the firm expressed an LNTOTASSETS is only significantly and positively related in current period. Variables measuring profitability of the firm are on average positively related to remuneration. We also observe that lagged variables (LNEBIT(-1), OPM(-1), ROCE(-1) and REMUNNETINC(-1)) are positively related to remuneration. The largest coefficient is for ROCE(-1) (model 1) which shows that 1% increase in ROCE in previous period will contribute towards 36.09% increase in LNTOTREM. This suggests that the same conclusion can be drawn regarding lagged financial performance as in previous chapter. In other words, directors are remunerated for good firm performance in the past as it takes time to make adjustments for their effort. Our reported results support H_6 and confirm that lagged financial performance is positively related to current executive directors' compensation.

LNMV is found to be positively related to REMGP for OLS model. We report that 1% increase in LNMV will lead to 2.86% increase in REMGP which also supports our hypothesis (H_2) as previous static results and the UK firms. It is, however, negatively related to REMMV but magnitude of these coefficients is very small (-0.61% for OLS and -0.57% for GMM estimation method). DEBTMV(-1) has a negative sign implying that increase in debt in previous period will decrease remuneration in current period. This finding can be supported

by Brockman et al. (2010) who reports negative association and relating it to the fact that debt increases monitoring.

One of the main differences is that DY is now negatively related to pay confirming previous findings reported by Bhattacharyya et al. (2008). Our results report that 1% increase in DY will reduce REMMV by -0.14% and -0.13% for OLS and GMM regressions respectively. Of course, the magnitude is very small, but this still implies that increase in payouts to shareholders will decrease directors' pay. That could be due to the fact that new projects require more investment and in order to avoid expensive finance from outside, firms opt for decreasing directors' pay. EPS(-1) is positively related to REMGP for both estimation methods.

Another corporate governance variable which is present in dynamic setting which was not included in static models is RCOMP. We report that 1% increase in remuneration committee compliance will cause LNTOTREM to decrease by 211.63% and 176.10% for OLS and GMM models respectively. The magnitude of these coefficients is extremely very large; however, it provides us with evidence to conclude that greater monitoring of remuneration committee will cause remuneration to decrease. We observed the same relationship for static models for UK firms. Other corporate governance variables have the same association with remuneration as reported findings for static models, which also contradict our third hypothesis.

Year effects hold the same relationship as reported results for static models. It can be seen (Panel H), before the financial crisis took place in 2008, remuneration was increasing; however, in years 2008 and 2009 the relationship is reported to be significant (for GMM model 4). This implies that it might be the case that straight after financial crisis, firms were very cautious regarding directors' compensation packs in order to avoid criticism. However, in year 2010 the relationship is positive again and that could be explained by the fact that remuneration is tied to good financial performance.

5.4 Conclusion

Substantial interest in continuously increasing executives' compensation packages placed greater attention on factors which could potentially solve the agency conflict between managers and shareholders thus emphasising incentive plans and analysing pay performance relationship.

We can generally conclude that most corporate governance variables measuring monitoring and board control do not contribute significantly to decrease in executives' pay as it was predicted, in some cases we even observe positive relationship. This suggests that increasing board control in Spanish firms does not have the same effect as we reported for UK firms.

Overall, having tested these models we observe that dynamic models can be considered more robust (based on diagnostic tests results) for this dataset as they capture time effect.

The significance of these results indicates that the level of control in firms is important. This leads to one of the main implications for policy-makers and that is to increase monitoring on the board level which can be achieved by referring recommendations provided in the Code of Best Practice. This can also serve as a recommendation for board size.

Apart from increasing the level of monitoring within companies, it is also extremely important for regulators to manage the stability of financial institutions which will safeguard the interests of other stakeholders. Bearing in mind that shareholders' wealth is at stake, it might be of their interest to increase shareholders' activism. After financial crisis, all corporations are under pressure from society to use available resources to maximise the value of firms. If shareholders are more engaged and are active to express their views, it would be easier to achieve well-being in the company and work towards firms' objectives.

Our results are also significant for academics. As it was highlighted in the literature review, there are not that many studies providing detailed analysis for Spain and our results (both static and dynamic) should provide interesting results which can be used in future research.

Chapter 6 Remuneration and Long-Term Performance

6.1 Introduction

This chapter investigates the long-run relation between executives' total remuneration and the financial and governance performance of the UK and Spain. Our analysis employs the same panel data for the 238 UK and 31 Spanish firms as in previous empirical chapters.

The analysis consists of three important econometric tests: i)tests for panel unit root in the variables; ii) tests for panel cointegration; and, iii) tests for error-correction mechanism based on the results of i) and ii). These three steps will follow methodology described in Chapter 3 for both countries. This is an entirely new but unexplored area for remuneration and firm performance studies. Our evidence suggests that there is a long-run relation between remuneration and several of the financial variables as determined by our cointegration tests. However, the results differ slightly across the two countries possibly due to differences in their legal arrangements. These findings add new unique insights to dynamic effects of long-term co-movement between observed variables.

Long-run remuneration is an extremely important area to study. Some previous empirical findings reported that pay is positively related to lagged firm performance (Doucouliagos et al., 2012a) suggesting that it takes time for remuneration packages to adjust to changes happening in the firm. It is essential to analyse dynamics in this area. Boschen et al. (2003) also highlight in their research the importance of studying long-term effects on remuneration as previous empirical pay-performance models are restricted. Having tested our dynamic models in previous two chapters, it is interesting to take this research question further and investigate what happens to relationship between remuneration and firm performance in the long-run in terms of cointegration between variables. Applying panel cointegration and error

correction models technique which was not used in this area before will provide some unique results.

The chapter comprises two main large sections and a conclusion. The first one covers the long-term performance analysis for the UK followed by the discussion of the same analysis for Spain. Last section will conclude this chapter.

A list of variables and their abbreviations which are used in this analysis can be found in Appendix A to which we will be referring during the discussion.

6.2 Remuneration and Long-Term Performance in the UK

This section concentrates on the analysis of co-movement and cointegration between variables for the UK firms and long-term equilibrium. We will follow methodology which was described in Chapter 3. Firstly, panel unit root tests will be analysed.

6.2.1 Panel unit root results

All three panel unit root tests were performed (see equations 3.7 and 3.8) and results for the level, first difference and second difference can be found in Appendix D. Table 6.1 below shows summarised results for the LLC unit root test. Our results show at what level of integration the variables become stationary. As it can be observed for the following variables in level form DY, GPM, INDNEDS, LIBASS, LNEBIT, NONINENDS, REMUNNETINC and ROCE we accept the null hypothesis meaning that there is non-stationarity in these variables. Whereas for other variables we reject the null at 1% significance level (at 5% significance level for FEMALE).

Table 6.1: Panel unit root results (UK)

Variables	Level	1st Difference	2nd Difference
DEBTMV	-	0.5735	-10.7666 [a]
DIROWN	-	1.0707	-5.3873 [a]
DY	0.1553	-10.1451 [a]	-
EPS	-	1.4551	-7.3270 [a]
FEES	-	1.2221	-14.7600 [a]
FEMALE	-	-0.2274	-5.8685 [a]
GPM	-1.1836	-8.8598 [a]	-
INDNEDS	-1.2317	-7.8918 [a]	-
LIBASS	-1.1128	-3.9182 [a]	-
LNEBIT	-0.2377	-2.2405 [b]	-
LNMV	-	0.5689	-10.4070 [a]
LNTOTASSETS	-	1.3375	-12.2937 [a]
LNTOTREM	-	-0.2855	-18.3948 [a]
LTDEBTMV	-	0.1359	-10.9697 [a]
LTDEBTTOTASS	-	1.3597	-13.7575 [a]
NCFMV	-	-1.0438	-8.6515 [a]
NONINEDS	-1.2341	-2.8512 [a]	-
OPM	-	2.6930	-12.7205 [a]
REMUNNETINC	-0.8693	-3.3009 [a]	-
ROA	-	0.9840	-1.4603 [b]
ROCE	-0.3200	-3.5698 [a]	-
TOBINQ	-	1.1761	-8.9603 [a]

Notes: [a] denotes that the coefficient is significant at the 1% level.

The table shows that some of the variables need to be second differenced to achieve stationarity where the first differences are non-stationary. This has an important econometric implication for our results in Chapter 5 meaning that those results may be based on non-stationary variables unless there is some rebalancing in the variables.

6.2.2 Panel Cointegration

Since we find that variables contain a unit root at various levels of integration, we can now perform the panel cointegration tests (see equations 3.9 and 3.10). Panel cointegration results (i.e. unit root tests on residuals from individual regressions) are shown in Table 6.2. That means names of variables in this table represent pair-wise residuals calculated by running OLS regression with LNTOTREM being dependent variable (please refer to Methodology section 3.4.5). For example, the following equation was used to calculate our residual for the first variable in the table: ΔDEBTMV:

$$LNTOTREM = \alpha + \beta \Delta DEBTMV + \varepsilon_t$$

The same principle was applied to calculate other residuals in this table.

All three tests indicate that the null hypothesis of no cointegration can be rejected at 1% significance level. That means there is a clear indication of long-run relationship between our dependent variable – LNTOTREM and financial and corporate governance variables.

As it was proposed by Granger (1981), if we find cointegration between pairs of variables that means these two variables move together in the same direction in the long-run ignoring lags even if it might not the case in the short-run. Various market and economic conditions are having an effect on achieving this equilibrium. This can also be interpreted further by stating that if there is any shock affecting any of the variables; it would have a long-term effect on it.

This implies that ECMs can be modeled in order to determine the dynamic relationship and whether equilibrium will be restored in the next time period.

As our main objective is to check whether remuneration is cointegrated with firm performance, these coefficients provide interesting results. Cointegration in other words means that two variables move in the same direction, i.e. they are in line and one variable will adjust of other changes. This implies that if for example directors get overpaid in one year in relation to firm performance; their level of remuneration is likely to be adjusted in the next few periods to match financial variables. In other words, directors do not necessarily misappropriate firm's funds as the long-run relationship between pay and firm performance is cointegrated. Similar conclusion may be drawn for corporate governance variables. Increase in board control will also move in the same trajectory as directors' remuneration.

Table 6.2: Cointegration test of LNTOTREM for UK firms

		Methods		
Corresponding Variable		LLC	IPS	ADF-Fisher Chi-square
Level	ΔDEBTMV	-3.4365[a]	-17.9948[a]	177.0940[a]
	ΔDIROWN	-3.4624[a]	-18.1190[a]	178.4050[a]
	DY	-3.9521[a]	-18.0373[a]	177.7130[a]
	ΔEPS	-3.6151[a]	-17.9049[a]	176.6970[a]
	ΔFEES	-3.2355[a]	-18.2317[a]	179.4070[a]
	ΔFEMALE	-3.0643[a]	-18.1693[a]	178.9240[a]
	GPM	-2.0372[b]	-17.7017[a]	170.3850[a]
	INDNEDS	-3.3012[a]	-17.4692[a]	173.1100[a]
	LIBASS	-3.7864[a]	-18.1632[a]	178.7490[a]
	LNEBIT	-2.4140[a]	-20.3747[a]	184.8950[a]
	ΔLNMV	-2.7574[a]	-16.9514[a]	168.4830[a]
	ΔLNTOTASSETS	-12.5170[a]	-21.1684[a]	196.2100[a]
	ΔLTDEBTMV	-3.5391[a]	-17.9254[a]	176.4000[a]
	ΔLTDEBTTOTASS	-3.8053[a]	-18.1223[a]	178.4180[a]
	ΔNCFMV	-3.4384[a]	-17.9943[a]	177.0900[a]
	NONINEDS	-3.4032[a]	-17.9549[a]	177.1100[a]
	ΔOPM	-3.6140[a]	-17.8490[a]	175.9830[a]
	REMUNNETINC	-3.3623[a]	-18.1606[a]	178.6250[a]
	ΔROA	-3.7364[a]	-18.1587[a]	178.7010[a]
	ROCE	-3.0548[a]	-17.2705[a]	169.2360[a]
	ΔTOBINQ	-4.1340[a]	-18.1351[a]	178.5180[a]
	RESID	-5.6242[a]	-26.3148[a]	190.0490[a]

Notes:[a] denotes that the coefficient is significant at the 1% level. Δ represents the first difference operator. RESID denotes a captured residual determined by running an OLS regression with all independent variables. Variables represent residuals of individual pair-wise regressions on LNTOTREM with corresponding variables.

6.2.3 Error-correction Models

Given that our variables are cointegrated, we now follow the next step by analysing ECMs results. Final estimated error correction models (see equations 3.13-3.15) are summarised in Tables 6.3 and 6.4.

Table 6.3 below reports the results of the ECM with lagged error correction term for all variables as well as diagnostic tests results. As LNTOTREM for the UK firms is stationary at 1st difference, for the ECMs we will use second difference of this variable, therefore it becomes ΔΔLNTOTREM.

Table 6.3: The error-correction model for the UK firms (ECTTOTAL), 2005-2011

	OLS Estimation	GMM Estimation
	Dependent Variable: LNTOTREM	
Model	(1)	(2)
C	-0.0915[a]	-0.0910[a]
	(0.0196)	(0.0143)
ΔΔDIROWN(-1)	-0.0026[c]	-0.0028[c]
	(0.0014)	(0.0015)
ΔΔFEMALE(-1)	-0.4559[a]	-0.4438[a]
	(0.1578)	(0.1336)
ΔGPM(-1)	0.0020	0.0021
	(0.0014)	(0.0013)
ΔLNEBIT(-1)	-0.1674[a]	-0.1676[a]
	(0.0177)	(0.0194)
ΔΔLNTOTASSETS(-1)	-0.1329[a]	-0.1338[a]
	(0.0180)	(0.0173)
ΔΔLNTOTREM(-1)	0.1857[a]	0.1825[a]
	(0.0358)	(0.0303)
ΔΔLTDEBTMV(-1)	0.0111[c]	0.0104[c]
	(0.0066)	(0.0062)
ΔΔLTDEBTTOTASS(-1)	0.1596[c]	0.1540[c]
	(0.0909)	(0.0790)
ΔΔNCFMV(-1)	-0.0903	-
	(0.0567)	

Table 6.3 cont.

	OLS Estimation	GMM Estimation
	Dependent Variable: LNTOTREM	
Model	(1)	(2)
ΔΔOPM(-1)	-0.0024[c]	-0.0025[b]
	(0.0014)	(0.0012)
ΔΔROA(-1)	0.0061[a]	0.0060[a]
	(0.0013)	(0.0012)
ΔΔTOBINQ(-1)	-0.0242[a]	-0.0232[a]
	(0.0049)	(0.0034)
ECTTOTAL(-1)	-1.5150[a]	-1.5132[a]
	(0.0595)	(0.0668)
Y2008	0.1271[a]	0.1220[a]
	(0.0483)	(0.0343)
Y2011	0.4361[a]	0.4350[a]
	(0.0466)	(0.0810)
Diagnostic Tests		
N	1044	1044
$\overline{R^2}$	0.6284	0.6275
S.E.	0.5239	0.5243
AIC	1.5604	-
Q-Stat	2.0607	2.4158
Auto LM(2)	23.4704	-
Auto LM(4)	11.9634	-
F-statistic	9.9885	-
Jarque-Bera	1376.2530	1444.4160

Notes: [a, b, c] denotes that the coefficient is significant at the 1%, 5% and 10% level, respectively. Figures in round brackets are standard errors. The lag length is one. ECT represents the error correction term of the variable. Δ is the first difference operator of the variable and ΔΔ is the second difference operator. N indicates the total number of observations. S.E. stands for standard error and AIC denotes Akaike Information Criterion. Q-Stat is checking for second-order autocorrelation in the residuals. Auto LM(2) and Auto LM(4) are Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags respectively. *F*-statistic stands for heteroskedasticity which is tested using Breusch-Pagan-Godfrey statistics.

Firstly, we concentrate on diagnostics which are used to test the adequacy of the estimated coefficients. $\overline{R^2}$and standard error values are similar for OLS and GMM models. Q-statistics is insignificant for both estimation methods meaning that the null of no autocorrelation in the

residuals cannot be rejected. Other diagnostic tests are significant indicating that there is a presence of heteroskedasticity and non-normal distribution (the Jarque-Bera test).

Table 6.3 shows that the ECTTOTAL(-1) coefficient is negative and significant at 1% level. This implies that there is a long-term relationship between LNTOTREM and the financial variable and corporate governance variables. This can be explained by previous research findings which report that directors with different talents and skills are competitively matched to firms with certain characteristics (Gabaix and Landier, 2008; Hubbard, 2005). Therefore competitive firms with high market value for example will employ managers with scarce skills and experience meaning that firms with similar financial and corporate governance characteristics will employ directors paying them similar wages so that in the long-run this pay is likely to converge. The same explanation can be applied using our estimated results. If all attributes of the firm are in line, then if there is any deviation from the equilibrium, this will be corrected in the next time period due to competitive market forces.

It was also reported by Faulkender and Yang (2013) in their dynamic model that after introduced regulation in 2006 which required all firms disclosing their remuneration peer group members, those with low inside ownership have selected firms with higher pay in order to justify their increased compensation packages. This implies that firms with similar financial performance will set directors' remuneration in line with peer group members. It means that in the long-run there is likely to be convergence in levels of remuneration amongst similar firms, meaning that remuneration will move in line with firm performance.

Table 6.4 below contains estimated results for ECM with individual error correction terms (based on equation 3.15) and now we will shift our attention to the analysis of this model, starting with discussion of diagnostic tests which are not different from the ones performed when we used the error ECTTOTAL. Even though that Q-statistics is significant, other

coefficients are significant implying that we exert some caution when interpreting the estimated coefficients.

Table 6.4: The error-correction model for the UK firms, 2005-2011

	OLS Estimation	GMM Estimation
	Dependent Variable: ΔΔLNTOTREM	
Model	(1)	(2)
C	-0.0789[a]	-0.1100[a]
	(0.0181)	(0.0180)
ΔΔDIROWN(-1)	-0.0042[a]	-0.0043[a]
	(0.0013)	(0.0015)
ΔDY(-1)	0.0127[b]	0.0127[b]
	(0.0058)	(0.0049)
ΔΔFEES(-1)	0.0082	0.0087
	(0.0059)	(0.0058)
ΔGPM(-1)	0.0016	0.0015
	(0.0012)	(0.0011)
ΔLIBASS(-1)	0.2209[c]	0.2136[b]
	(0.1161)	(0.1006)
ΔΔLNTOTASSETS(-1)	-0.0571[a]	-0.0549[a]
	(0.0177)	(0.0156)
ΔΔLNTOTREM(-1)	0.1809[a]	0.1873[a]
	(0.0324)	(0.0296)
ΔΔLTDEBTMV(-1)	0.0101[c]	0.0106[a]
	(0.0061)	(0.0036)
ECTΔDEBTMV(-1)	12.2842[a]	12.2650[a]
	(4.4860)	(3.6795)
ECTΔLNMV(-1)	-0.4343[a]	-0.4566[a]
	(0.1261)	(0.1181)
ECTΔLNTOTASSETS(-1)	-0.2660[b]	-0.2380[b]
	(0.1199)	(0.0967)
ECTROCE(-1)	-10.5119[b]	-10.4708[a]
	(4.4147)	(3.6889)

Table 6.4 cont.

	OLS Estimation	GMM Estimation
	Dependent Variable: ΔΔLNTOTREM	
Model	(1)	(2)
ECTΔTOBINQ(-1)	-2.5816[a]	-2.6245[a]
	(0.6809)	(0.4600)
Y2008	0.1402[a]	0.1710[a]
	(0.0421)	(0.0326)
Y2009	-	0.0694[c]
		(0.0369)
Y2010	-	0.0774[c]
		(0.0417)
Y2011	0.4491[a]	0.4780[a]
	(0.0427)	(0.0797)
Diagnostic Tests		
N	1199	1199
$\overline{R^2}$	0.6615	0.6626
S.E.	0.5035	0.5030
AIC	1.4786	-
Q-Stat	0.6319	0.5598
Auto LM(2)	9.7878[a]	-
Auto LM(4)	7.8808[a]	-
F-statistic	12.7572[a]	-
Jarque-Bera	3356.4350[a]	3410.4690[a]

Notes: [a, b, c] denotes that the coefficient is significant at the 1%, 5% and 10% level, respectively. Figures in round brackets are standard errors. The lag length is one. ECT represents the error correction term of the variable. Δ is the first difference operator of the variable and ΔΔ is the second difference operator. N indicates the total number of observations. S.E. stands for standard error and AIC denotes Akaike Information Criterion. Q-Stat is checking for second-order autocorrelation in the residuals. Auto LM(2) and Auto LM(4) are Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags respectively. *F*-statistics stands for heteroskedasticity which is tested using Breusch-Pagan-Godfrey statistics.

As it can be seen from Table 6.4 there are five individual error correction terms and coefficients of all these variables are significant. Reported coefficients are negative for four of these variables as expected. Magnitudes and sign of coefficients for error terms in ECMs are similar for both OLS and GMM estimation methods. We also observe that standard error and

$\overline{R^2}$are better by a small margin for GMM model meaning that Model 2 provides slightly better results than OLS method of estimation.

The relationship between pair-wise error correction terms and LNTOTREM can provide interesting results as the relationship between dependent variables and these variables (which were used to calculate error correction terms) were significant in previous empirical chapters too and the importance of these variables on total remuneration was discussed.

These significant results reported in Table 6.4 imply that if there is a shock affecting DEBTMV, LNMV, LNTOTASSETS, ROCE and TOBINQ which has an effect on LNTOTREM, this disequilibrium will be adjusted in the long run. In other words, an "error" by which a variable will differ from the equilibrium will be corrected for in the next period. The speed of adjustment, however, differs and we use the size of the coefficients to predict that – the larger the coefficient, the faster is the adjustment. Thus DEBTMV will be adjusted quicker in the long-run than other variables – 12.28 and 12.27 for OLS and GMM models respectively. These results imply that the level of remuneration will be quicker adjusted to changes in firm's debt. Previously discussed the relationship between DEBTMV and LNTOTREM in previous chapters, the rapid convergence between variables can be explained by the fact that short-term debt usually implies greater monitoring, meaning that if the amount of debt increases, directors are likely to decrease their wages in order to be able to finance investments of their companies.

As it was discussed there are not that many previous studies concentrating on the dynamic effects between pay and performance and especially testing for long-run relationship between variables; however, Boschen et al. (2003) have tested a model by including three lags of their firm performance variables and found that if there is "unexpected" good accounting

performance in a firm, CEO's compensation tends to increase a lot in short period of time as a response to good performance. This finding supports our predictions.

Another interesting relationship can be observed between ECTΔLNMV(-1) and LNTOTREM. We would expect these two variables to converge in the long-run and the main theoretical explanation for this could be as discussed in literature review that a rise in executive directors' compensation packs could be a result of increase in market value of the firm rather than managers expropriating from firms which is linked to agency issues (Gabaix and Landier, 2008). Therefore, if we use this explanation, we would expect remuneration and market value to move in the same direction in the long-run.

To summarise, given the estimated results it is clear that there is a long-run cointegration relationship between selected variables; we also conclude that if there is a shock taking place affecting any of the variables, equilibrium will be restored in the next period and this "error" will be corrected.

6.3 Remuneration and Long-Term Performance in Spain

In this section, we will present and analyse the long-term relationship for Spanish firms using methodology describe in section 6.2. Please refer to Appendix A for the explanation of variables which are used in this analysis.

6.3.1 Panel unit root results

We start by looking at panel unit root tests (equations 3.7 and 3.8). Table 6.5 contains summary of the LLC panel unit root test results for Spanish companies. Appendix E contains detailed results for all three panel unit root tests which were conducted. All variables contain unit root at the level form (i.e. probabilities are significant), therefore we only check for stationarity at the 1^{st} difference to prove that. There is no need to carry out 2^{nd} difference checks.

Table 6.5: Panel unit root results (Spain)

Variables	Level	1st Difference	2nd Difference
DEBTMV	-1.1047	-9.9209[a]	-
DIROWN	-1.0332	-24.8326 [a]	-
DY	-1.2197	-1.7905[b]	-
EPS	-1.1979	-8.4405 [a]	-
FEES	-1.2067	-5.5652 [a]	-
FEMALE	-0.5545	-6.9311 [a]	-
GPM	-1.1801	-11.7182 [a]	-
INDNEDS	-0.6293	-13.2049 [a]	-
LIBASS	-1.1591	-15.9581 [a]	-
LNEBIT	-0.8184	-13.4773 [a]	-
LNMV	-0.9962	-12.5573 [a]	-
LNSTDEBTLTDEBT	-0.3956	-6.9263 [a]	-
LNTAXCF	-0.0861	-12.8409 [a]	-
LNTOTASSETS	-1.1261	-9.2809 [a]	-
LNTOTDEBT	-1.1169	-15.2933 [a]	-
LNTOTREM	-0.9594	-7.5926 [a]	-
LTDEBTMV	-1.1374	-9.9197 [a]	-
LTDEBTTOTASS	-0.7153	-16.0733 [a]	-
MEETING	-0.7062	-4.8010 [a]	-
NCFMV	-1.0613	-13.4662 [a]	-
NONINEDS	-1.1038	-15.8042 [a]	-
OPM	-1.0881	-8.5261 [a]	-
REMUNNETINC	-1.1963	-4.1664 [a]	-
ROA	-0.1991	-4.8773 [a]	-
ROCE	-0.5046	-2.7443 [a]	-

Table 6.5 cont.

Variables	Level	1st Difference	2nd Difference
ROE	-1.1436	-6.2134 [a]	-
TOBINQ	-1.0914	-10.6841 [a]	-

Notes: [a] denotes that the coefficient is significant at the 1% level.

6.3.2 Panel Cointegration

Table 6.6 below provides results for cointegration for Spain, i.e. panel unit root tests performed on pair-wise residuals. All variables were used at the level form.

Statistical significance of the coefficients allows us to draw the same conclusion as we did in section 6.3 for UK firms and conclude that there is a long-term relationship between LNTOTREM and corresponding variables; therefore, we can model ECMs using the same method as for the UK companies.

Table 6.6: Cointegration test of LNTOTREM for Spanish firms

		Methods		
Corresponding Variable		LLC	IPS	ADF-Fisher Chi-square
Level	DEBTMV	-8.5939[a]	-7.1220[a]	41.8535[a]
	DIROWN	-7.8873[a]	-6.8744[a]	35.8848[a]
	DY	-8.0711[a]	-6.7391[a]	39.0144[a]
	EPS	-8.1213[a]	-6.7963[a]	39.4397[a]
	FEES	-6.3338[a]	-6.0465[a]	30.5335[a]
	FEMALE	-6.5483[a]	-5.9976[a]	31.6335[a]
	GPM	-7.0191[a]	-6.3755[a]	33.3747[a]
	INDNEDS	-5.4908[a]	-6.0440[a]	31.8738[a]
	LIBASS	-8.1625[a]	-6.8733[a]	40.0111[a]
	LNEBIT	-7.2617[a]	-6.5341[a]	34.2093[a]
	LNMV	-8.2245[a]	-6.8957[a]	40.1779[a]
	LNSTDEBTLTDEBT	-8.0457[a]	-6.7128[a]	38.8187[a]
	LNTAXCF	-6.8367[a]	-6.1545[a]	32.2071[a]
	LNTOTASSETS	-7.8700[a]	-6.6750[a]	38.5379[a]
	LNTOTDEBT	-7.9667[a]	-6.7331[a]	38.9698[a]
	LTDEBTMV	-8.7468[a]	-7.1564[a]	42.1072[a]
	LTDEBTTOTASS	-8.1198[a]	-6.7728[a]	39.2648[a]
	MEETING	-5.0550[a]	-5.6119[a]	28.1999[a]
	NCFMV	-8.9277[a]	-7.2441[a]	42.7533[a]
	NONINEDS	-5.1467[a]	-6.0332[a]	31.8180[a]
	OPM	-7.9929[a]	-6.7447[a]	39.0564[a]
	REMUNNETINC	-8.4105[a]	-7.0929[a]	41.6381[a]
	ROA	-8.1848[a]	-6.8623[a]	39.9300[a]
	ROCE	-8.2066[a]	-6.8692[a]	39.9810[a]
	ROE	-8.4457[a]	-6.9885[a]	40.8658[a]

Table 6.6 cont.

	Methods		
Corresponding Variable	LLC	IPS	ADF-Fisher Chi-square
TOBINQ	-8.4100 [a]	-6.8251 [a]	39.6537 [a]
RESID	-2.0825 [a]	-4.8374 [a]	22.6999 [a]

Notes: [a] denotes that the coefficient is significant at the 1% level. RESID denotes a captured residual determined by running an OLS regression with all independent variables. Variables represent residuals of individual pair-wise regressions on LNTOTREM with corresponding variables.

6.3.3 Error-correction Models

Given the existence of cointegration between variables, this brings us to the next and final step of the analysis for Spanish firms – the estimation of ECMs. Table 6.7 and 6.8 report estimated findings.

Firstly, we will look at diagnostic tests for these models. $\overline{R^2}$is slightly higher for GMM estimation method (74.99%) and it also has lower standard error. The Q-Statistic coefficient is insignificant indicating that there is no autocorrelation in the residuals. Breusch-Godfrey serial correlation test also confirms that we cannot reject the null hypothesis of no autocorrelation. *F*-statistics shows that there no heteroskedasticity. The Jarque-Bera test is also insignificant for both models. These diagnostic tests results imply that these estimation methods are reliable.

Table 6.7: The error-correction model for Spanish firms (ECTTOTAL)

	OLS Estimation	GMM Estimation
	Dependent Variable: ΔLNTOTREM	
Model	(1)	(2)
ΔDIROWN(-1)	-	-7.2790[b]
		(2.9742)
ΔDY(-1)	-0.3876[c]	-0.5080[a]
	(0.2157)	(0.1383)
ΔFEES(-1)	-0.4893	-0.7856[a]
	(0.6714)	(0.2116)
ΔGPM(-1)	0.2765[b]	0.4542[a]
	(0.1050)	(0.1603)
ΔINDNEDS(-1)	-34.3076[b]	-58.9337[a]
	(12.9820)	(15.4940)
ΔLIBASS(-1)	53.7837[a]	73.9972[a]
	(10.1156)	(13.8860)
ΔLNEBIT(-1)	-	-3.8699[b]
		(1.6822)
ΔLNMV(-1)	1.8388[a]	3.7131[a]
	(0.6047)	(0.9417)
ΔLNTOTASSETS(-1)	4.0144[a]	8.7205[a]
	(1.4254)	(2.8141)
ΔLNTOTREM(-1)	-0.3370[b]	-0.3824[b]
	(0.1367)	(0.1409)
ΔLTDEBTMV(-1)	-	-16.4752[b]
		(6.8782)
ΔLTDEBTTOTASS(-1)	20.9230[c]	39.0915[a]
	(11.0434)	(10.2732)
ΔNCMFMV(-1)	-	-44.5262[a]
		(15.9935)
ΔNONINEDS(-1)	-36.3567[a]	-60.1894[a]
	(12.8477)	(17.2411)
ΔREMUNNETINC(-1)	-119.8213[a]	-98.8708[a]
	(40.9083)	(26.1546)
ΔROA(-1)	-	0.3360[b]
		(0.1355)
ECTTOTAL(-1)	-0.7555[a]	-0.5454[b]
	(0.1738)	(0.2105)

Table 6.7 cont.

	OLS Estimation	GMM Estimation
	Dependent Variable: ΔLNTOTREM	
Model	(1)	(2)
Y2006	5.7460[a]	6.4417[a]
	(1.7590)	(1.0331)
Y2008	-9.8089[a]	-9.2649[a]
	(2.0636)	(2.2196)
Y2011	6.0655[a]	6.2315[a]
	(2.1167)	(2.2535)
Diagnostic Tests		
N	58	55
$\overline{R^2}$	0.7063	0.7499
S.E.	5.1500	5.0034
AIC	6.3339	-
Q-Stat	0.5232	0.7749
Auto LM(2)	0.3408	-
Auto LM(4)	0.6347	-
F-statistic	1.0374	-
Jarque-Bera	0.4411	1.5531

Notes: [a, b, c] denotes that the coefficient is significant at the 1%, 5% and 10% level, respectively. Figures in round brackets are standard errors. The lag length is one. ECT represents the error correction term of the variable. Δ is the first difference operator of the variable and ΔΔ is the second difference operator. N indicates the total number of observations. S.E. stands for standard error and AIC denotes Akaike Information Criterion. Q-Stat is checking for second-order autocorrelation in the residuals. Auto LM(2) and Auto LM(4) are Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags respectively. *F*-statistic stands for heteroskedasticity which is tested using Breusch-Pagan-Godfrey statistics.

As Table 6.7 demonstrates, ECTTOTAL(-1) has a negative and significant coefficient as expected. It is much lower for Spanish firms for OLS and GMM models than for the UK indicating a slower rate of adjustment. As it was discussed in previous chapters, due to differences in legal systems, such as the ability to participate in corporate voting, quality of accounting systems and protection of investors which affect the way firms are structured (La Porta et al., 1998). It is in particular important how the law is enforced in these two countries

and UK firms having greater monitoring of their directors, it can be argued that it will take quicker for financial and corporate governance variables to achieve long-term equilibrium. Therefore the rate of adjustment in the long-run for Spanish firms is expected to be lower.

Final ECM model results are summarised in Table 6.8 on the next page. Firstly, we will draw our attention to diagnostic tests which show reliability of this estimation method. $\overline{R^2}$is quite high for both models – 88.84% for OLS and 89.89% for GMM. Q-Statistic and *F*-statistic also confirm no autocorrelation in the residuals and no heteroskedasticity as it was for previous model (Table 6.6). These results indicate that both ECMs for Spanish firms are reliable estimation methods.

Table6.8: The error-correction model for Spanish firms, 2005-2011

	OLS Estimation	GMM Estimation
	Dependent Variable: ΔLNTOTREM	
Model	(1)	(2)
C	-12.5505[a]	-10.5902[a]
	(2.3836)	(1.5559)
ΔDEBTMV(-1)	-147.6538[b]	-
	(66.3266)	
ΔDIROWN(-1)	-21.9424[a]	-42.8310[a]
	(6.4349)	(8.2246)
ΔDY(-1)	-0.6591[a]	-0.5174[a]
	(0.1977)	(0.1380)
ΔFEMALE(-1)	-	-32.2281[b]
		(12.5536)
ΔGPM(-1)	-	0.2769[a]
		(0.0563)
ΔLNEBIT(-1)	-	-4.9696[b]
		(2.1297)
ΔLNMV(-1)	6.6653[a]	6.9730[a]
	(1.1296)	90.9419)
ΔLNSTDEBTLTDEBT(-1)	12.0799[a]	13.0272[a]
	(2.3170)	(2.0134)
ΔLNTAXCF(-1)	3.8002[b]	2.0950
	(1.6013)	(1.5928)
ΔLNTOTASSETS(-1)	-14.2458[a]	-
	(3.7344)	
ΔLNTOTDEBT(-1)	-7.8057[c]	-14.7786[a]
	(3.9421)	(4.2812)
ΔLNTOTREM(-1)	-0.2061	-0.2634[b]
	(0.1259)	(0.0964)
ΔLTDEBTMV(-1)	190.1633[b]	-
	(85.2464)	
ΔLTDEBTTOTASS(-1)	48.8666[a]	76.0749[a]
	(15.5636)	(16.4377)
ΔMEETING(-1)	3.7954[c]	4.6288[a]
	(2.2018)	(1.5903)
ΔOPM(-1)	-0.5816[a]	-0.7588[a]
	(0.1447)	(0.1410)
ΔROA(-1)	-3.1943[a]	-1.8995[a]
	(0.6389)	(0.3259)

Table 6.8 cont.

	OLS Estimation	GMM Estimation
	Dependent Variable: ΔLNTOTREM	
Model	(1)	(2)
ΔROCE(-1)	2.6744[a]	2.2928[a]
	(0.4792)	(0.2331)
ECTDEBTMV(-1)	-8.0403[a]	-5.0152[a]
	(2.1623)	(1.4885)
ECTFEES(-1)	2.8713[a]	4.3410[a]
	(0.8703)	(0.7921)
ECTGPM(-1)	12.5637[a]	8.4110[a]
	(3.6034)	(2.5592)
ECTLNMV(-1)	3.2780[b]	2.6625[b]
	(1.3890)	(1.1767)
ECTLNTOTASSETS(-1)	-9.0631[a]	-5.2560[b]
	(3.2268)	(2.3596)
ECTROA(-1)	18.3749[a]	16.1502[a]
	(4.9567)	(4.2262)
ECTROCE(-1)	-20.8973[a]	-21.9765[a]
	(4.3316)	(2.9370)
Y2005	7.8712[a]	7.5596[a]
	(2.1529)	(2.3405)
Y2006	9.7808[a]	12.9141[a]
	(1.9223)	(2.4248)
Y2008	-8.7105[a]	-8.8251[a]
	(2.3565)	(2.3708)
Y2010	11.8174[a]	11.1088[a]
	(2.2854)	(2.6315)
Diagnostic Tests		
N	56	53
$\overline{R^2}$	0.8884	0.8989
S.E.	4.0355	3.9009
AIC	5.9344	-
Q-Stat	0.6064	1.7912
Auto LM(2)	1.2069	-
Auto LM(4)	0.0000	-
F-statistic	1.1168	-
Jarque-Bera	1.7196	2.8578

Notes: [a, b, c] denotes that the coefficient is significant at the 1%, 5% and 10% level, respectively. Figures in round brackets are standard errors. The lag length is one. ECT represents the error correction term of the variable. Δ is the first difference operator of the variable and ΔΔ is the second difference operator. N indicates the total number of observations. S.E. stands for standard error and AIC denotes Akaike Information Criterion. Q-Stat is checking for second-order autocorrelation in the residuals. Auto LM(2) and Auto LM(4) are Breusch-Godfrey serial correlation Lagrange multiplier tests using 2 and 4 lags respectively. *F*-statistic stands for heteroskedasticity which is tested using Breusch-Pagan-Godfrey statistics.

Significance of error-correction terms coefficients suggests that these variables respond to changes to achieve long-run equilibrium and adjust in the next time period. However, the negative sign as expected is only present for ECTDEBTMV(-1), ECTLNTOTASSETS(-1) and ECTROCE(-1), we observe positive sign for other four variables: ECTFEES(-1), ECTGPM(-1), ECTLNMV(-1) and ECTROA(-1). According to Engle and Granger (1987), the ECM coefficients in error-correction representation should be negative, if they are insignificant or positive this indicates that coefficients are positively "biased" (Antzoulatos, 1996). The implication of these results is that they are not converging in the long-run; which is not what we have expected, considering the fact that in our previous model ECTTOTAL(-1) and some variables in this model have a negative coefficient sign. There are, however, other explanations (apart from the divergence) which can justify what we observe. It is likely that there were some problems with the model specification. As it is suggested by Antzoulatos (1996), when error-correction coefficient have opposite-than-expected sign it could mean that variables were estimated inefficiently, this bias can be reduced by including more stationary variables in the model and this can be done in our future research. These positive results can also be attributed to the presence of autocorrelation (Q-statistics accepts the null of residual correlation). It is also important to note that our sample size for Spain is quite small given the unavailability of data, so results are quite different to UK firms where sample size is much bigger.

Rates of adjustment to equilibrium are also different. As estimated coefficients suggest the fastest rates of adjustment is for the profitability variable – ROCE for both OLS and GMM

models. For other variables (DEBTMV and ROA) return to equilibrium takes place at a much lower rate. This can be explained by the fact that directors in Spanish firms might increase their remuneration based on an increase in profitability figures for the firm only and adjust to equilibrium quicker.

The long-term rate of adjustment between LNTOTREM and DEBTMV is much slower in Spain rather than in the UK for both OLS and GMM models. The difference in rates of adjustment is highly dependent on the legal rules (quality of enforcement in particular) of countries in which firms operate (La Porta et al., 1998). As it was discussed in the literature review legal rules of countries also determine how well investors and shareholders are protected from directors expropriating from firms usually taking the form of paying higher wages for themselves, meaning that return for investors is lower making it more difficult for firms to raise their investment leading to an increase in debt (La Porta et al., 2000a). It has also been established that countries' legal systems which originate from common law (i.e. the UK) have better investors' protection than countries with French-origin law (i.e. Spain). The speed of adjustment is quicker for the UK because there is greater monitoring making directors decrease their remuneration packages and respond to it quicker if the debt goes up (this relationship supports our previous estimated findings in Chapter 4).

When two different countries are analysed, it is also important to consider the broad cultural framework which has an effect on development of corporate behaviour. As it has been mentioned in the literature review, we cannot only consider institutional framework when discussing differences between countries, there are also broader factors which influence the formulation of social norms, values and beliefs and these are generally influenced by the nation's culture (Bae et al., 2012). Stulz and Williamson (2003) also refer to religion as being one of the important factors which influences the development of legal systems. Using religion as a proxy for culture, authors report that Catholic countries (the majority of Spanish

population are Catholics) tend to have weaker creditor rights that Protestants and Protestant countries have better enforcement of rights. Linking this to the formation of laws and to remuneration, it can probably be suggested that it is more difficult for executive directors to set excessive levels of remuneration given strict corporate governance controls without justifying it; therefore, we would expect to find quicker adjustment between remuneration and firm performance in the long-run than in Spanish firms. Another interesting factor Stulz and Williamson (2003) mention is language. English speaking countries are found to have some form of mechanism to address corporate issues shareholders are not happy with. This again can explain the fact of rapid adjustment. If we consider that remuneration is linked to firm performance, we would expect that any disequilibrium will be noticed sooner and remuneration would be more used as an incentive rather than directors having extremely high pay. Taking all of these issues into account it is not surprising that we would find differences in results for both countries. Of course, there are various number of issues which are interlinked with each other and all have effects on differences between UK and Spain. It is not possible to consider and test all of these factors in just one study, but these results we provide here using unique methodology in an area shows that there is a large scope for further investigation and research.

Apart from all the reasons discussed above, we can also attribute mixed evidence between these two countries to the fact that our dataset differs dramatically, which can have an effect on the estimated results. We have previously highlighted in Chapter 5 that dataset for Spain had a lot of missing observations due to the lack of disclosed data in Manifest reports and Datastream.

6.4 Conclusion

As it has been stated by Doucouliagos et al. (2012a), the literature on remuneration convergence is still relatively limited due to the fact that not many previous studies have taken into account dynamic effects capturing what happens over time. However, we present new results on the long-run relation between remuneration and firm performance using cointegration and error-correction methodologies. Taking into account various differences between these countries previously discussed, such as legal origins, culture, institutional framework, etc. – we still observe interesting similar results. Even if for example we expected Spain to have weaker regulations which means that it might be difficult to achieve equilibrium (i.e. slower adjustment of certain variables for example) if there are any instantaneous shocks occurring in an economy, it is still the case that in both countries total directors' remuneration adjusts with other independent variables in the long-run. In other words, the estimates for both countries indicate the directors' remuneration levels adjust in line with the financial performance of the firms for each country; however, this adjustment is taking place quicker in the UK as the coefficient for ECTTOTAL is higher than it is for Spain. These results imply that if directors over- or under-pay themselves, their levels of remuneration will be adjusted in the long-run as it will move in line with firm performance and market value.

This chapter has also provided extended evidence for the importance of legal rules and laws of enforcement in various countries. Supporting our previous conclusions, it was found that countries with better enforcement and legal rights, originating from common law legal arrangements have greater monitoring and protection of shareholders and investors; therefore, they also experience more close long-run relationship between variables, i.e. achieving the convergence faster.

Our results have a significant contribution to academia. Using a completely new method in this area to analyse the link between long-run firm performance and remuneration, we provide new insights for future research. After the financial crisis took place in 2008, many researchers have concentrated on the analysis of past events to draw conclusions regarding what was the main cause of the crisis; however, from the point of view of many practitioners it is time to concentrate more on the future, i.e. what policies should be adopted to avoid similar problems. One of the most important implications for practitioners is to concentrate more on the long-run goals for the firm and identify clear objectives for directors, for example clear effective incentive contracts in order to resolve the agency problem and make sure that remuneration does not contribute towards more agency costs, but actually serves as an incentive.

Chapter 7 Conclusion

7.1 Introduction

The question of directors' remuneration continues to attract a lot of attention in the media, amongst regulators and academics. Especially after the financial crisis in 2008 many academic researchers have focused on the level of monitoring provided by boards of directors, the structure of corporate governance mechanisms and the way the compensation is designed for directors (Essen et al., 2013; Dowell et al., 2011). However, despite this huge interest and large amount of research carried out in the area in the last few years, it still remains uncertain as to what types of governance mechanisms adequately impact the level of monitoring, firm performance and compensation. In other words, it is a very complex area to investigate as many factors, such as industry performance, economic environment, legal origin have an effect on governance and thus compensation. This thesis was meant to provide insights on those issues.

In the next section, we outline the main findings of the study. We also shed some light on the main similarities and differences between UK and Spanish firms in terms of the effects of their legal origin on corporate governance. The main contributions of this thesis to the existing academic research will also be discussed. We conclude by stating the limitations of the study and also provide suggestions for future research.

7.2 Summary of Findings

The following objectives were set at the beginning of this study:

- To examine whether executive directors' remuneration is associated with the financial performance of firms.
- Given the difference in legal origins of countries, to investigate the relationship between firm performance and board monitoring and remuneration for the two countries.
- To test for the relation between executive compensation and corporate governance arrangements of both countries.
- To examine the long-term relationship between executive compensation and firm performance. This consideration allows us to test whether directors' compensation have a long-run relation with the performance of firms.

This study looked at the relationship between executive directors' compensation levels, firm performance and corporate governance. We found that financial performance of firms and market value positively associated with executives' pay in both countries. These results confirm that first two hypotheses (H_1 and H_2) are supported for both countries. This suggests that compensation moves in line with good performance meaning that directors do not reward themselves entirely "excessively". This conclusion may appear controversial in the light of the media outcry regarding excessive pay. The positive relation does not suggest that the pay may not be excessive. It simply means that the executive pay is in line or positively correlated with firm performance supporting the view that remuneration acts more as an incentive rather than creating more agency costs. The dynamic setting has also confirmed our predicted hypotheses. Our results have shown that in both countries remuneration is positively linked with lagged performance and lagged dependent variables supporting H_5 and H_6. It was also

found that the size of the firm matters, reporting positive and significant relationship between LNTOTASSETS and remuneration.

Some researchers, of course, report in their study that inefficient accounting, management misconduct, unethical behaviour have contributed to the failure of some firms (Soltani, 2014). Examples of a few corporate scandals due to fraudulent behaviour in firms have caused a general mistrust in our current economic environment. These scandals should be viewed as anecdotal. That is, all firms do not appear to behave that way. However, if all firms were acting in the same way and if all directors were expropriating funds and benefiting themselves by increasing compensation that would have a detrimental effect on the economy as a whole, i.e. extreme unemployment, falling standards of living, etc. It is highly unlikely that directors of all firms will behave in the same way. That is what our results prove. Having taken into account a large number of firms we do not observe unexpected movements in remuneration as it is generally in line with firm performance and market value. These results are supported by our long-run results that focus on long-run pay.

Corporate governance variables were also incorporated into our static and dynamic models. As La Porta et al. (1998) suggest, legal aspects such as efficiency of the judicial system, rule of law, quality of accounting systems will have an effect on monitoring mechanisms and thus on compensation as broad cultural context will have an effect how laws are enforced and on general behaviour of people. We find strong negative association between board control and remuneration for the UK companies and this confirms our third hypothesis, indicating that compensation is inversely related to levels of board monitoring. However, these results differ for Spanish companies. We observe that despite board control mechanisms, remuneration in firms still goes up, rejecting H_3. These differences largely depend on the law practices in those countries (Barros and Nunes, 2007).

Directors' ownership also is an important factor influencing firm performance and remuneration and as it has been discussed in literature review these links are often complicated and mixed evidence exists. Our results support predicted hypotheses (H_5) which states that directors' ownership is negatively related to directors' pay, meaning that once directors become owners of the company they are unlikely to overpay themselves as they have a personal interest in increasing firm's value.

Individual analysis of each country has helped to identify interesting relationships between some explanatory variables and total executives' remuneration in both countries and this has shed some light on the differences between UK and Spanish firms given the fact that various factors have played an important role in determining the sets of rules these countries adopt.

7.3 Contribution of the Research

This research provides a unique comparative study for the UK and Spanish firms. One of the main contributions is that we provide a comparison between firms whose corporate governance arrangements are affected by their legal origins. That is, UK firms are affected by common-law whereas, Spain firms are affected by civil law. In our research we have not used explanatory variables which measure legal arrangements in countries as described by La Porta et al. (1998); however, taking into account previous knowledge about law origin we can attribute differences in corporate governance practices which in turn have an effect on firm performance and remuneration to the difference in origin of the country.

The study has a great contribution to a growing literature on dynamic setting when investigating the relationship between firm performance and remuneration. As it was highlighted by Doucouliagos et al. (2012) dynamic effects have not been analysed in as much detail as static models were. We have extended both of our OLS and GMM models and

introduced lagged dependent and financial variables in the estimation. In addition, we analyse total executive directors' compensation rather than just CEO remuneration. Zalewska (2014) indicates that there is a limited amount of research which tests all executives.

The study provides an extension to corporate governance literature by adopting panel cointegration and panel error correction models technique. This is a substantial contribution to the research as it models the data generating process of each variable to ensure that the appropriate transformation is applied prior to incorporating each variable in the model. We are also able to estimate long-run relations in this framework using both the panel cointegration and panel error-correction. That way, we can show the long-run behaviour of executive remuneration. This modelling approach provided a major advantage over the Arellano and Bond (1991) two-step GMM (see also Arellano and Bover, 1995; Blundell and Bond, 1998) by capturing an appropriate data transformation variable-by-variable and facilitation of long-run estimation. In other words, we avoid over-differencing which is possible under the Arellano and Bond (1991) approach.

7.4 Limitations of the Study and Suggestions for Future Research

This study has contributed towards the existing knowledge in the area and has extended our understanding of the role of corporate governance mechanisms for executive pay. However, despite all contributions, the research is subject to certain weaknesses and limitations which provide a good background for future research where these issues can be addressed. It should be noted that some limitations of the research could not have been avoided due to certain characteristics of the databases used for collecting details for UK and Spanish firms. As the datasets were created by manually collecting variables from Manifest reports, these

could have been subjected to human error. The data was checked carefully; however, we should take this issue into account anyway.

There are other limitations that we need to address. For example, as Coles et al. (2001) outlines that most studies only focused on a few corporate governance mechanisms (i.e. each study taking into account only one or two variables at a time); however, firms rely on different monitoring mechanisms and some variables may not have a significant effect in some firms, whereas they would be important factors in other firms. Therefore, it is important to include as many corporate governance variables as possible to measure monitoring and board control. Our study has incorporated nine corporate governance variables and examined the effect of each in turn. It could, however, be improved by constructing an index to understand the role of each corporate governance variable.

We have analysed and discussed how firm performance factors and corporate governance affect executive directors' compensation. Previously, some evidence was found that managerial turnover also has an impact on the level of directors' compensation (Coughlan and Schmidt, 1985; Evans et al. 2014); therefore, taking into account executive directors' tenure might give a better insight for the future research results. In terms of measuring board diversity, we have only taken into account the percentage of women on the board; however, some studies (e.g. Carter et al., 2003) outline the importance of including racial and cultural composition of the board as it has an effect on how diverse workforce is and thus increasing the value of the firm as people from different background could potentially bring in new experience and skills; therefore, this study could be improved by looking closer at minority groups and investigating how these can affect firm's performance and thus directors' remuneration levels.

Both non-executive directors' remuneration and CEO remuneration could also have been used in the analysis as in Lin and Lin (2014). O'Reilly et al. (1988) for example outline the

importance of comparing compensation committee directors' salary with CEO compensation, they argue that people naturally make comparisons which affect their decision making process. Therefore, if non-executive directors have an increase in their pay, CEO compensation will go up as well. This argument can also apply to executive directors other than CEOs. Therefore, future research could incorporate these variables into their remuneration models separately as an explanatory variables and also test long-term relationship between these variables using panel cointegration approach. The justification for our approach was that we assumed that executive directors have shared interests with CEOs and this in turn will cause them to desire higher pay.

Another important factor worth considering for future research is dividing firms into broad industry groups rather than analysing all of them together. It has been discussed before that economic conditions of an industry have an impact on firm performance as well meaning that good financial performance of a firm may not solely be attributed to managerial skills. Conyon and Murphy (2000) distinguish difference industry categories in their analysis and find that this has an impact on reported results, especially if differentiating between financial and non-financial sector. Coles et al. (2001) also support this view by providing strong evidence of industry performance having an effect on individual firms.

Also, as well as other numerous studies on corporate governance, our analysis concentrates on total directors' compensation package not distinguishing between cash compensation and equity-based components. This criticism was outlined by Ozkan (2011) who identified the importance of employing a much broader measure of remuneration. However, for this particular research differentiating compensation in this way would have been impossible because of the difficulty of collecting our data.

This research can also be extended by introducing extra explanatory variables that relate to the legal origins of firms. We have provided evidence that results differ for the UK and Spanish firms. For example, we find differences in relationship between corporate governance variables and remuneration, i.e. greater monitoring in Spanish firms does not lead to a reduction in executive's pay. Since La Porta et al. (1998) distinguishes between the effects of different legal origins it would be useful to incorporate legal variables in future work to assess their impacts. For example measures such as, corruption, the risk of expropriation, rule of law may contribute to differences in the effects of remuneration on firm performance. Future research should also consider splitting regressions and analyse the results before 2008 (when the financial crisis took place) and after 2008. Also, it would be interesting to include more countries in future research rather than just two. These factors call for analysis that includes listed firms from more countries.

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Appendices

Appendix A: Dictionary of variables

Variable	Definition
Dependent Variables	
LNTOTREM	Natural Logarithm of Total Remuneration
REMGP	Total Remuneration over Gross Profit
REMMV	Total Remuneration over Market Value
Independent Variables	
Financial Variables	
FEES	Non-audit Fees as % of Audit Fees
LNTOTASSETS	Natural Logarithm of Total Assets
Profitability	
GPM	Gross Profit Margin
LNEBIT	Natural Logarithm of EBIT
OPM	Operating Profit Margin
REMUNNETINC	Remuneration Over Income
ROA	Return on Assets
ROCE	Return on Capital Employed
ROE	Return on Equity
Firm Value	
LNMV	Natural Logarithm of Market Value
NCFMV	Net Cash Flow over Market Value
TOBINQ	Market Value over Total Assets
Leverage	
DEBTMV	Total Debt over Market Value
LIBASS	Liabilities over Total Assets
LNSTDEBTLTDEBT	Natural logarithm of Short-term Debt over Long-term Debt
LNTOTDEBT	Natural logarithm of Total Debt
LTDEBTMV	Long-term Debt over Market Value
LTDEBTTOTASS	Long-term Debt over Total Assets
Investment	
DY	Dividend Yield
EPS	Earnings Per Share
Taxation Cash Flow	
LNTAXCF	Natural logarithm of Taxation Cash Flow

Appendix A cont.

Variable	Definition
Corporate Governance	
ACOMP	Audit Committee Compliance (Dummy Variable)
CEOCHAIR	CEO and Chair combined (Dummy Variable)
COMP	Board Composition Compliance (Dummy Variable)
DIROWN	Directors' Ownership
FEMALE	Ratio of female on the board
INDNEDS	Ratio of Independent NEDs
MEETING	Number of Meetings over Number of Directors on the Board
NONINEDS	Ratio of Non-independent NEDs
RCOMP	Remuneration Committee Compliance (Dummy Variable)
SIZE	Board Size Compliance (Dummy Variable)
Year Effect	
Y2005	Year effect of 2005
Y2006	Year effect of 2006
Y2008	Year effect of 2008
Y2009	Year effect of 2009
Y2010	Year effect of 2010
Y2011	Year effect of 2011

Appendix B: Correlation coefficients for UK firms

1	LNTOTREM													
2	REMGP	-.276[a]												
3	REMMV	-.207[a]	.695[a]											
4	FEES	-.092[a]	.190[a]	.141[a]										
5	LNTOTASSETS	.682[a]	-.623[a]	-.549[a]	-.111[a]									
6	GPM	-.042	-.107[a]	-.086[a]	.078[a]	-.080[a]								
7	LNEBIT	.650[a]	-.670[a]	-.688[a]	-.107[a]	.846[a]	.045							
8	OPM	.144[a]	-.051	-.207[a]	.060[b]	.104[a]	.659[a]	.266[a]						
9	REMUNNETINC	-.196[a]	.524[a]	.564[a]	.104[a]	-.463[a]	-.037	-.604[a]	-.051[b]					
10	ROA	-.049	-.053	-.218[a]	-.054[b]	-.269[a]	.281[a]	.132[a]	.380[a]	.055[b]				
11	ROCE	-0.02	-.031	-.160[a]	-.075[a]	-.236[a]	.146[a]	.092[a]	.274[a]	.096[a]	.859[a]			
12	ROE	.027	-.122[a]	-.228[a]	-.082[a]	-.111[a]	.096[a]	.205[a]	.262[a]	.027	.770[a]	.905[a]		
13	DEBTMV	.154[a]	-.094[a]	.111[a]	.054[b]	.435[a]	-.153[a]	.217[a]	-.072[a]	-.188[a]	-.519[a]	-.514[a]	-.283[a]	
14	LNMV	.633[a]	-.642[a]	-.861[a]	-.146[a]	.763[a]	.043	.847[a]	.239[a]	-.426[a]	.150[a]	.123[a]	.193[a]	-.026
15	LTDEBTMV	.132[a]	-.082[a]	.080[a]	.053[b]	.428[a]	-.147[a]	.221[a]	-.061[b]	-.203[a]	-.498[a]	-.497[a]	-.270[a]	.963[a]
16	NCFMV	.110[a]	-.204[a]	.180[a]	-.103[a]	.177[a]	-.195[a]	.109[a]	-.050	-.012	-.114[a]	-.066[b]	-.009	.328[a]
17	TOBINQ	-.133[a]	-.007	-.383[a]	-.043	-.384[a]	.234[a]	-.058[b]	.199[a]	.073[a]	.640[a]	.556[a]	.476[a]	-.710[a]
18	LIBASS	-.066[b]	-.085[a]	-.018	-.145[a]	-.207[a]	-.366[a]	-.100[a]	-.388[a]	.081[a]	.215[a]	.348[a]	.322[a]	-.241[a]
19	LNSTDEBTLTDEBT	.541[a]	-.565[a]	-.475[a]	-.126[a]	.720[a]	-.062[b]	.653[a]	.076[a]	-.376[a]	-.108[a]	-.126[a]	-0.01	.303[a]
20	LNTOTDEBT	.549[a]	-.574[a]	-.524[a]	-.079[a]	.874[a]	.036	.763[a]	.164[a]	-.448[a]	-.192[a]	-.242[a]	-.065[b]	.586[a]
21	LTDEBTTOTASS	.083[a]	-.116[a]	-.146[a]	.050[b]	.331[a]	-.007	.272[a]	.076[a]	-.211[a]	-.260[a]	-.288[a]	-.048	.771[a]
22	DY	.177[a]	-.232[a]	.050	-.124[a]	.175[a]	-.076[a]	.147[a]	-.048	-.005	-.022	.025	.074[a]	.206[a]
23	EPS	.251[a]	-.271[a]	-.344[a]	-.143[a]	.290[a]	.109[a]	.528[a]	.322[a]	-.086[a]	.513[a]	.480[a]	.521[a]	-.096[a]
24	LNTAXCF	.604[a]	-.670[a]	-.577[a]	-.129[a]	.704[a]	-.027	.792[a]	.209[a]	-.423[a]	.100[a]	.083[a]	.154[a]	.080[a]
25	ACOMP	.108[a]	-.138[a]	-.081[a]	.016	.124[a]	-.095[a]	.154[a]	-.065[b]	-.074[a]	.005	.019	.029	.030
26	CEOCHAIR	.007	-.026	-.001	-.004	.015	-.087[a]	.003	-.094[a]	-.027	-.041	-.008	.012	.026

Appendix B cont.

		1	2	3	4	5	6	7	8	9	10	11	12	13
27	COMP	-.036	-.208[a]	-.136[a]	-.010	.125[a]	-.066[b]	.110[a]	-.116[a]	-.151[a]	-.044	-.048	.002	.097[a]
28	DIROWN	-.346[a]	.478[a]	.436[a]	.103[a]	-.490[a]	.051	-.506[a]	.031	.340[a]	.032	.029	-.029	-.180[a]
29	FEMALE	.297[a]	-.270[a]	-.249[a]	-.067[a]	.265[a]	-.050	.301[a]	-.028	-.160[a]	.045	.054[b]	.083[a]	-0.02
30	INDNEDS	.263[a]	-.421[a]	-.367[a]	-.045	.386[a]	-.048	.394[a]	-.064[b]	-.264[a]	-.023	-.030	.022	.076[a]
31	MEETING	-.446[a]	.132[a]	.164[a]	.093[a]	-.367[a]	-.145[a]	-.325[a]	-.259[a]	.104[a]	-.056[b]	-.036	-.057[b]	-.042
32	NONINEDS	-.067[b]	.040	.028	-.051[b]	-.004	.119[a]	-.043	.137[a]	-.043	.010	-.012	-.006	.053[b]
33	RCOMP	.027	-.098[a]	-.029	.010	.046	-.130[a]	.064[b]	-.085[a]	-.030	-.015	-.007	.021	-.005
34	Y2005	-.114[a]	.028	-.007	.108[a]	-.060[b]	-.046	-.066[b]	-.026	.079[a]	-.019	.001	-.012	-.039
35	Y2006	-.072[a]	.001	-.071[a]	.068[a]	-.044	.012	.002	.001	-.008	.063[b]	.094[a]	.093[a]	-.066[b]
36	Y2007	.003	-.013	-.061[b]	.037	-.024	.023	-.002	.031	-.052[b]	.089[a]	.127[a]	.118[a]	-.049
37	Y2008	.054[b]	.018	.140[a]	-.016	.019	.002	.019	-.005	-.025	-.061[b]	-.022	-.004	.119[a]
38	Y2009	-.003	-.001	.061[b]	-.049	.020	-.033	-.035	-.064[b]	-.039	-.150[a]	-.175[a]	-.172[a]	.077[a]
39	Y2010	.036	-.024	-.051[b]	-.071[a]	.033	.008	.014	.023	.029	.026	-.021	-.006	-.023
40	Y2011	.082[a]	-.008	-.016	-.065[b]	.050	.031	.061[b]	.039	.019	.054[b]	.002	-.010	-.025

Appendix B cont.

		14	15	16	17	18	19	20	21	22	23	24	25	26
15	LTDEBTMV	-.012												
16	NCFMV	-.111[a]	.291[a]											
17	TOBINQ	.235[a]	-.672[a]	-.459[a]										
18	LIBASS	-.027	-.307[a]	.103[a]	.277[a]									
19	LNSTDEBTLTDEBT	.618[a]	.192[a]	.149[a]	-.183[a]	.045								
20	LNTOTDEBT	.666[a]	.569[a]	.178[a]	-.303[a]	-.238[a]	.727[a]							
21	LTDEBTTOTASS	.141[a]	.832[a]	.103[a]	-.281[a]	-.265[a]	.100[a]	.558[a]						
22	DY	.052[b]	.188[a]	.248[a]	-.208[a]	.089[a]	.156[a]	.208[a]	.114[a]					
23	EPS	.405[a]	-.086[a]	.007	.159[a]	-.032	.244[a]	.212[a]	.002	.074[a]				
24	LNTAXCF	.737[a]	.068[b]	.109[a]	.015	.041	.601[a]	.595[a]	.092[a]	.153[a]	.356[a]			
25	ACOMP	.125[a]	.016	.027	-.012	.083[a]	.123[a]	.116[a]	.018	.131[a]	.021	.123[a]		
26	CEOCHAIR	-.008	.021	.014	-.019	.091[a]	-0.01	.023	0.04	.015	-.094[a]	.069[a]	.071[a]	
27	COMP	.078[a]	.097[a]	.060[b]	-.049	0.05	.155[a]	.173[a]	.074[a]	.089[a]	-.047	.068[b]	.150[a]	.078[a]
28	DIROWN	-.492[a]	-.195[a]	-.068[a]	.045	-.080[a]	-.357[a]	-.454[a]	-.214[a]	-.209[a]	-.101[a]	-.418[a]	-.184[a]	-.100[a]
29	FEMALE	.327[a]	-.027	.046	.064[b]	.121[a]	.255[a]	.272[a]	.019	.120[a]	.092[a]	.286[a]	.094[a]	-.005
30	INDNEDS	.408[a]	.073[a]	.036	.013	.109[a]	.341[a]	.353[a]	.086[a]	.127[a]	.032	.355[a]	.459[a]	.077[a]
31	MEETING	-.352[a]	-.031	-.014	.029	.163[a]	-.320[a]	-.281[a]	-.035	-.003	-.199[a]	-.328[a]	.032	.083[a]
32	NONINEDS	-.062[b]	.049	.031	-.063[b]	-.114[a]	.021	-.011	.009	-.092[a]	.056[b]	-.063[b]	-.461[a]	-.088[a]
33	RCOMP	.045	-.018	.029	.006	.084[a]	.076[a]	.060[b]	-.021	.069[a]	-.041	.061[b]	.693[a]	.092[a]
34	Y2005	-.053[b]	-.025	-.047	.034	-.003	-.058[b]	-.062[b]	.004	-.078[a]	-.060[b]	-.034	-.091[a]	.004
35	Y2006	.021	-.056[b]	-.126[a]	.096[a]	.006	-0.02	-.046	.003	-.114[a]	.029	-.042	-.037	-.002
36	Y2007	.037	-.045	-.103[a]	.091[a]	.014	.005	-.011	.010	-.071[a]	.059[b]	.005	.020	.001
37	Y2008	-.095[a]	.097[a]	.108[a]	-.154[a]	.019	.053	.046	.028	.170[a]	-.027	.037	.003	-.006

Appendix B cont.

		14	15	16	17	18	19	20	21	22	23	24	25	26
38	Y2009	-.046	.065[b]	.119[a]	-.098[a]	-.013	.009	.026	.017	0.05	-.145[a]	.004	.039	-.013
39	Y2010	.064[b]	-.023	.034	.028	-.011	.006	.029	-.022	-.022	.047	-.008	.033	.007
40	Y2011	.068[a]	-.018	.004	.011	-.012	.002	.013	-.039	.056[b]	.093[a]	.032	.024	.010

		27	28	29	30	31	32	33	34	35	36	37	38	39
28	DIROWN	-.241[a]												
29	FEMALE	.066[a]	-.202[a]											
30	INDNEDS	.450[a]	-.469[a]	.302[a]										
31	MEETING	.135[a]	.006	-.138[a]	-.003									
32	NONINEDS	-.117[a]	.241[a]	-.133[a]	-.477[a]	-.248[a]								
33	RCOMP	.081[a]	-.142[a]	.089[a]	.378[a]	.107[a]	-.512[a]							
34	Y2005	-.027	.017	-.107[a]	-.150[a]	-.042	.064[b]	-.069[a]						
35	Y2006	-.006	.000	-.042	-.089[a]	-.024	.037	-.080[a]	-.150[a]					
36	Y2007	-.001	-.011	-.031	-.054[b]	.011	.035	-.015	-.154[a]	-.159[a]				
37	Y2008	-.005	-.002	-.002	-.015	.002	.021	.036	-.157[a]	-.162[a]	-.166[a]			
38	Y2009	.005	.006	.026	.027	.043	.025	.040	-.159[a]	-.164[a]	-.169[a]	-.172[a]		
39	Y2010	.003	.006	.041	.052[b]	.033	-.022	.042	-.160[a]	-.165[a]	-.170[a]	-.173[a]	-.176[a]	
40	Y2011	.028	-.016	.104[a]	.211[a]	-.029	-.149[a]	.037	-.163[a]	-.169[a]	-.173[a]	-.177[a]	-.179[a]	-.180[a]

Appendix C: Correlation coefficients for Spanish firms

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	LNTOTREM													
2	REMGP	.732[a]												
3	REMMV	.751[a]	.855[a]											
4	FEES	.080	.294[a]	.203[b]										
5	LNTOTASSETS	.334[a]	-.090	-.060	-.264[a]									
6	GPM	-.140	-.070	-.150	-.080	-.333[a]								
7	LNEBIT	.314[a]	-.110	-.030	-.226[b]	.907[a]	-.227[b]							
8	OPM	.010	-.030	-.180	-.130	.000	.709[a]	.070						
9	REMUNNETINC	.675[a]	.839[a]	.771[a]	.160	-.070	-.090	-.150	.010					
10	ROA	-.090	-.180	-.090	-.060	-.140	.256[a]	.110	.402[a]	-.120				
11	ROCE	-.050	-.170	-.050	-.040	-.110	.170	.110	.251[a]	-.100	.870[a]			
12	ROE	-.060	-.190	-.110	.040	.060	.306[a]	.216[b]	.400[a]	-.140	.692[a]	.759[a]		
13	DEBTMV	.040	.020	.270[a]	.020	.244[a]	-.452[a]	.170	-.424[a]	.020	-.215[b]	-.180	.000	
14	LNMV	.170	-.040	-.298[a]	-.100	.513[a]	.190	.473[a]	.443[a]	-.020	-.030	-.080	.100	-.554[a]
15	LTDEBTMV	.080	-.010	.233[b]	-.010	.326[a]	-.478[a]	.300[a]	-.415[a]	-.010	-.160	-.140	-.020	.908[a]
16	NCFMV	-.020	-.140	.090	-.080	.160	-.467[a]	.130	-.461[a]	-.090	-.030	.070	.020	.692[a]
17	TOBINQ	-.030	.000	-.287[a]	.030	-.170	.495[a]	-.040	.562[a]	-.020	.196[b]	.050	.040	-.899[a]
18	LIBASS	-.140	.050	.150	.201[b]	-.399[a]	-.100	-.377[a]	-.332[a]	.110	.120	.197[b]	.180	.130
19	LNSTDEBTLTDEBT	.293[a]	-.020	.030	-.130	.825[a]	-.360[a]	.749[a]	-.090	.030	-.190[b]	-.203[b]	.060	.395[a]
20	LNTOTDEBT	.316[a]	-.050	-.060	-.150	.914[a]	-.239[b]	.859[a]	.120	-.040	-.150	-.201[b]	.110	.262[a]
21	LTDEBTTOTASS	.080	.030	-.070	.030	.323[a]	.080	.392[a]	.287[a]	-.030	-.090	-.220[b]	.070	.180
22	DY	.100	-.180	-.150	-.256[b]	.418[a]	.100	.384[a]	.218[b]	-.050	.150	.120	.257[a]	-.060
23	EPS	.020	-.060	.080	.080	.297[a]	-.196[b]	.451[a]	-.060	-.030	.319[a]	.266[a]	.496[a]	.455[a]
24	LNTAXCF	.258[a]	-.190	-.090	-.279[a]	.801[a]	-.274[a]	.838[a]	.050	-.190	.150	.150	.150	.120
25	ACOMP	-.030	-.080	-.100	-.110	.010	.354[a]	.050	.382[a]	-.020	.170	.050	.040	-.110
26	CEOCHAIR	.010	.000	-.080	.110	-.060	.100	.070	.170	-.140	.349[a]	.296[a]	.160	-.314[a]
27	COMP	.110	.090	.120	-.170	.090	.160	.160	.236[b]	.130	.322[a]	.184[b]	.186[b]	.120

Appendix C cont.

		1	2	3	4	5	6	7	8	9	10	11	12	13
28	DIROWN	-.030	.080	.070	.100	-.360[a]	.130	-.359[a]	-.187[b]	.060	-.060	-.040	-.090	.010
29	FEMALE	-.030	.160	.150	-.160	-.110	.110	-.160	-.080	.100	-.080	-.180	-.130	.170
30	INDNEDS	.090	.010	-.030	-.274[a]	.180	.180	.245[b]	.326[a]	.000	.268[a]	.140	.090	-.140
31	MEETING	-.050	-.100	-.030	-.010	-.010	.140	.110	.130	-.160	.304[a]	.201[b]	.190	.050
32	NONINEDS	-.100	-.040	-.020	.259[b]	-.110	-.100	-.120	-.259[a]	-.030	-.297[a]	-.268[a]	-.160	.100
33	RCOMP	.020	-.040	-.060	.010	.196[b]	.198[b]	.347[a]	.227[b]	-.110	.266[a]	.216[b]	.244[a]	-.030
34	SIZE	-.040	.070	.070	.020	-.380[a]	.250[b]	-.361[a]	.060	-.030	.180	.090	.080	-.040
35	Y2005	.160	.000	.020	.100	.080	-.090	.150	-.070	-.010	.060	.070	.030	-.020
36	Y2006	.140	.253[a]	.235[b]	.293[a]	-.120	.110	.090	.090	.110	.210[b]	.250[a]	.201[b]	-.130
37	Y2007	.010	-.040	-.010	-.020	.160	-.060	.170	.020	.000	.030	.100	.050	.090
38	Y2008	-.375[a]	-.429[a]	-.384[a]	-.070	-.060	-.050	-.050	-.080	-.339[a]	.060	.120	.020	-.050
39	Y2009	-.291[a]	-.269[a]	-.313[a]	-.140	.010	.080	-.060	.050	-.205[b]	-.010	-.090	.030	.020
40	Y2010	.227[b]	.288[a]	.291[a]	-.010	-.040	-.050	-.110	-.010	.197[b]	-.110	-.120	-.070	.040
41	Y2011	.140	.150	.110	-.110	.050	.020	-.060	-.020	.203[b]	-.200[b]	-.251[a]	-.223[b]	.060

		14	15	16	17	18	19	20	21	22	23	24	25	26
15	LTDEBTMV	-.444[a]												
16	NCFMV	-.553[a]	.732[a]											
17	TOBINQ	.681[a]	-.817[a]	-.764[a]										
18	LIBASS	-.395[a]	-.070	.090	-.160									
19	LNSTDEBTLTDEBT	.378[a]	.343[a]	.160	-.223[b]	-.030								
20	LNTOTDEBT	.568[a]	.324[a]	.050	-.050	-.326[a]	.875[a]							
21	LTDEBTTOTASS	.336[a]	.390[a]	.030	.090	-.440[a]	.280[a]	.547[a]						
22	DY	.382[a]	-.080	-.100	.100	-.080	.391[a]	.373[a]	-.040					
23	EPS	-.030	.430[a]	.274[a]	-.352[a]	.192[b]	.408[a]	.371[a]	.196[b]	.320[a]				
24	LNTAXCF	.363[a]	.214[b]	.160	-.090	-.417[a]	.604[a]	.680[a]	.180	.349[a]	.267[a]			

Appendix C cont.

		14	15	16	17	18	19	20	21	22	23	24	25	26
25	ACOMP	.070	-.080	-.070	.188[b]	-.194[b]	-.070	.050	.150	-.110	-.080	.080		
26	CEOCHAIR	.180	-.251[a]	-.223[b]	.296[a]	.030	-.150	-.020	-.040	.060	.050	.090	.120	
27	COMP	-.060	.080	.070	-.060	-.010	.120	.110	.070	-.020	.150	.150	.338[a]	.020
28	DIROWN	-.231[b]	-.020	-.040	-.050	.311[a]	-.170	-.293[a]	-.010	-.170	-.150	-.393[a]	-.130	-.150
29	FEMALE	-.245[a]	.130	.080	-.170	.050	-.020	-.060	.030	.050	-.010	-.190	.090	-.100
30	INDNEDS	.201[b]	-.060	-.100	.191[b]	-.238[b]	.050	.196[b]	.180	.060	.070	.211[b]	.402[a]	.212[b]
31	MEETING	-.080	.070	.030	-.030	.090	-.060	.050	.020	-.030	.219[b]	-.030	.212[b]	.200
32	NONINEDS	-.110	.040	.010	-.100	.160	.040	-.080	-.110	.010	-.030	-.150	-.271[a]	-.274[a]
33	RCOMP	.130	-.040	-.080	.130	.020	.170	.248[a]	.090	.020	.160	.303[a]	.415[a]	.314[a]
34	SIZE	-.266[a]	-.120	-.100	.040	.230[b]	-.339[a]	-.325[a]	-.223[b]	-.150	.040	-.338[a]	.110	.110
35	Y2005	.060	-.040	.060	.030	.090	.140	.060	-.070	-.100	.090	.199[b]	.030	.090
36	Y2006	-.060	-.110	-.090	.100	-.040	-.140	-.100	.000	-.300[a]	.020	.130	.070	.140
37	Y2007	.000	.110	.170	-.090	-.040	.080	.100	.020	-.100	.020	.140	.090	-.060
38	Y2008	-.020	-.030	.090	.030	.070	-.030	-.070	-.080	.110	-.020	-.040	-.140	-.020
39	Y2009	.020	.020	-.040	.000	-.040	.030	.050	.100	.010	.020	-.010	.060	-.100
40	Y2010	-.010	.000	-.070	-.030	.050	-.020	-.010	-.030	.130	.040	-.222[b]	-.150	-.010
41	Y2011	.020	.080	-.030	-.040	-.080	.020	.030	.050	.160	-.140	-.050	.090	-.030

Appendix C cont.

		27	28	29	30	31	32	33	34	35	36	37	38	39	40
28	DIROWN	-.050													
29	FEMALE	.110	.080												
30	INDNEDS	.610[a]	-.337[a]	.207[b]											
31	MEETING	.373[a]	-.140	.170	.456[a]										
32	NONINEDS	-.544[a]	.269[a]	-.100	-.850[a]	-.302[a]									
33	RCOMP	.389[a]	-.269[a]	.000	.486[a]	.352[a]	-.313[a]								
34	SIZE	.187[b]	.110	.306[a]	.207[b]	.605[a]	-.208[b]	.030							
35	Y2005	.040	-.070	-.216[b]	.090	-.080	-.100	.250[a]	.050						
36	Y2006	.191[b]	-.080	-.209[b]	.050	.060	-.040	.211[b]	-.070	-.120					
37	Y2007	.187[b]	-.020	-.090	.090	.010	-.170	.070	-.080	-.080	-.120				
38	Y2008	-.223[b]	.090	-.140	-.199[b]	.070	.120	-.130	.030	-.120	-.188[b]	-.120			
39	Y2009	-.030	-.050	.110	-.010	-.080	.040	-.040	-.050	-.120	-.180	-.120	-.180		
40	Y2010	-.080	.000	.186[b]	.020	.050	.010	-.130	.100	-.150	-.235[b]	-.150	-.235[b]	-.228[b]	
41	Y2011	.000	.110	.230[b]	.010	-.070	.060	-.100	.000	-.120	-.194[b]	-.120	-.194[b]	-.187[b]	-.243[a]

Appendix D: Panel unit root results for UK firms

Null: Unit root

Variables		Methods					
		Lag	LLC	Lag	IPS	Lag	ADF-Fisher Chi-square
Level	DEBTMV	20	-7.5454[a]	20	-7.5689[a]	20	59.5934[a]
			(0.0000)		(0.0000)		(0.0000)
	DIROWN	20	-7.5467[a]	20	-7.7499[a]	20	61.8194[a]
			(0.0000)		(0.0000)		(0.0000)
	DY	13	0.1553	13	-8.2777[a]	13	68.2780[a]
			(0.5617)		(0.0000)		(0.0000)
	EPS	20	-4.0183[a]	20	-7.0501[a]	20	53.4886[a]
			(0.0000)		(0.0000)		(0.0000)
	FEES	20	-3.2378[a]	20	-7.7776[a]	20	62.1720[a]
			(0.0006)		(0.0000)		(0.0000)
	FEMALE	20	-1.6196[b]	20	-6.6407[a]	20	48.7417[a]
			(0.0527)		(0.0000)		(0.0000)
	GPM	12	-1.1836	12	-5.5712[a]	12	36.9405[a]
			(0.1183)		(0.0000)		(0.0000)
	INDNEDS	16	-1.2317	16	-8.7355[a]	16	73.9253[a]
			(0.1090)		(0.0000)		(0.0000)
	LIBASS	20	-1.1128	20	-7.6189[a]	20	60.2379[a]
			(0.1329)		(0.0000)		(0.0000)
	LNEBIT	10	-0.2377	10	-5.5646[a]	10	36.5611[a]
			(0.4061)		(0.0000)		(0.0000)
	LNMV	20	-9.6538[a]	20	-7.7106[a]	20	61.3209[a]
			(0.0000)		(0.0000)		(0.0000)
	LNTOTASSETS	20	-6.3086[a]	20	-7.3536[a]	20	57.0647[a]
			(0.0000)		(0.0000)		(0.0000)
	LNTOTREM	20	-2.6956[a]	20	-6.1766[a]	20	43.2161[a]
			(0.0035)		(0.0000)		(0.0000)
	LTDEBTMV	20	-7.5195[a]	20	-7.4931[a]	20	58.6684[a]
			(0.0000)		(0.0000)		(0.0000)
	LTDEBTTOTASS	20	-4.9992[a]	20	-7.1070[a]	20	54.1542[a]
			(0.0000)		(0.0000)		(0.0000)
	NCFMV	20	-7.1724[a]	20	-7.5024[a]	20	58.7968[a]
			(0.0000)		(0.0000)		(0.0000)
	NONINEDS	18	-1.2341	18	-8.1162[a]	18	66.2375[a]
			(0.1086)		(0.0000)		(0.0000)

	OPM	20	-5.1949 [a]	20	-7.3305 [a]	20	56.7465 [a]
			(0.0000)		(0.0000)		(0.0000)
	REMUNNETINC	17	-0.8693	17	-8.2736 [a]	17	68.2206 [a]
			(0.1924)		(0.0000)		(0.0000)
	ROA	20	-4.9136 [a]	20	-7.4782 [a]	20	58.5497 [a]
			(0.0000)		(0.0000)		(0.0000)
	ROCE	12	-0.3200	12	-9.8744 [a]	12	87.9506 [a]
			(0.3745)		(0.0000)		(0.0000)
	TOBINQ	20	-5.2676 [a]	20	-7.6301 [a]	20	60.3722 [a]
			(0.0000)		(0.0000)		(0.0000)
First Difference	ΔDEBTMV	13	0.5735	13	-17.7098 [a]	13	177.8020 [a]
			(0.7168)		(0.0000)		(0.0000)
	ΔDIROWN	14	1.0707	14	-17.3817 [a]	14	175.2360 [a]
			(0.8579)		(0.0000)		(0.0000)
	ΔDY	3	-10.1451 [a]	3	-31.0831 [a]	3	191.7650 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔEPS	10	1.4551	10	-19.7337 [a]	10	193.5400 [a]
			(0.9272)		(0.0000)		(0.0000)
	ΔFEES	7	1.2221	7	-22.3044 [a]	7	205.7690 [a]
			(0.8892)		(0.0000)		(0.0000)
	ΔFEMALE	11	-0.2274	11	-16.1524 [a]	11	163.3340 [a]
			(0.4101)		(0.0000)		(0.0000)
	ΔGPM	7	-8.8598 [a]	7	-18.2100 [a]	7	178.4870 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔINDNEDS	4	-7.8918 [a]	4	-25.6121 [a]	4	209.8350 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔLIBASS	12	-3.9182 [a]	12	-16.3937 [a]	12	165.9130 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔLNEBIT	2	-2.2405 [b]	2	-21.8416 [a]	2	194.2510 [a]
			(0.0125)		(0.0000)		(0.0000)
	ΔLNMV	10	0.5689	10	-16.8076 [a]	10	169.8410 [a]
			(0.7153)		(0.0000)		(0.0000)
	ΔLNTOTASSETS	11	1.3375	11	-16.8704 [a]	11	170.5520 [a]
			(0.9095)		(0.0000)		(0.0000)
	ΔLNTOTREM	9	-0.2855	9	-16.9928 [a]	9	168.7760 [a]
			(0.3876)		(0.0000)		(0.0000)
	ΔLTDEBTMV	13	0.1359	13	-17.5926 [a]	13	176.6560 [a]
			(0.5540)		(0.0000)		(0.0000)

	ΔLTDEBTTOTASS	10	1.3597	10	-18.1776 [a]	10	182.1360 [a]
			(0.9130)		(0.0000)		(0.0000)
	ΔNCFMV	12	-1.0438	12	-18.5569 [a]	12	184.7600 [a]
			(0.1483)		(0.0000)		(0.0000)
	ΔNONINEDS	11	-2.8512 [a]	11	-18.7348 [a]	11	186.1360 [a]
			(0.0022)		(0.0000)		(0.0000)
	ΔOPM	11	2.6930	11	-19.3847 [a]	11	190.7520 [a]
			(0.9965)		(0.0000)		(0.0000)
	ΔREMUNNETINC	6	-3.3009 [a]	6	-26.1665 [a]	6	209.2080 [a]
			(0.0005)		(0.0000)		(0.0000)
	ΔROA	16	0.9840	16	-15.2528 [a]	16	154.0040 [a]
			(0.8374)		(0.0000)		(0.0000)
	ΔROCE	7	-3.5698 [a]	7	-22.0021 [a]	7	201.8820 [a]
			(0.0002)		(0.0000)		(0.0000)
	ΔTOBINQ	13	1.1761	13	-16.9782 [a]	13	171.5430 [a]
			(0.8802)		(0.0000)		(0.0000)
Second Difference	ΔΔDEBTMV	7	-10.7666 [a]	7	-31.8218 [a]	7	178.8310 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔΔDIROWN	8	-5.3873 [a]	8	-30.1955 [a]	8	190.5750 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔΔDY	2	2.2099	2	-51.3027 [a]	2	18.4207 [a]
			(0.9864)		(0.0000)		(0.0001)
	ΔΔEPS	7	-7.3270 [a]	7	-30.9969 [a]	7	186.2960 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔΔFEES	4	-14.7600 [a]	4	-41.8471 [a]	4	75.4023 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔΔFEMALE	5	-5.8685 [a]	5	-31.0331 [a]	5	189.0940 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔΔGPM	5	11.4749	5	-23.2553 [a]	5	202.7200 [a]
			(1.0000)		(0.0000)		(0.0000)
	ΔΔINDNEDS	3	3.4578	3	-40.4885 [a]	3	94.4773 [a]
			(0.9997)		(0.0000)		(0.0000)
	ΔΔLIBASS	7	4.8931	7	-24.2235 [a]	7	209.7610 [a]
			(1.0000)		(0.0000)		(0.0000)
	ΔΔLNEBIT	3	12.7315	3	-30.6880 [a]	3	175.4120 [a]
			(1.0000)		(0.0000)		(0.0000)
	ΔΔLNMV	4	-10.4070 [a]	4	-32.3704 [a]	4	180.6520 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔΔLNTOTASSETS	4	-12.2937 [a]	4	-32.5542 [a]	4	179.4910 [a]
			(0.0000)		(0.0000)		(0.0000)

ΔΔLNTOTREM	3	-18.3948 [a]	3	-37.0364 [a]	3	129.8560 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔΔLTDEBTMV	7	-10.9697 [a]	7	-31.6876 [a]	7	179.6740 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔΔLTDEBTTOTASS	4	-13.7575 [a]	4	-34.8499 [a]	4	158.0880 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔΔNCFMV	7	-8.6515 [a]	7	-32.0156 [a]	7	177.1700 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔΔNONINEDS	6	4.7270	6	-29.1304 [a]	6	198.8870 [a]
		(1.0000)		(0.0000)		(0.0000)
ΔΔOPM	6	-12.7205 [a]	6	-34.2430 [a]	6	157.9980 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔΔREMUNNETINC	5	4.0741	5	-38.8382 [a]	5	109.0360 [a]
		(1.0000)		(0.0000)		(0.0000)
ΔΔROA	6	-1.4603 [b]	6	-31.7707 [a]	6	181.9500 [a]
		(0.0721)		(0.0000)		(0.0000)
ΔΔROCE	3	-0.2777	3	-42.7753 [a]	3	63.3637 [a]
		(0.3906)		(0.0000)		(0.0000)
ΔΔTOBINQ	6	-8.9603 [a]	6	-30.7046 [a]	6	189.9920 [a]
		(0.0000)		(0.0000)		(0.0000

Appendix E: Panel unit root results for Spanish firms

Null: Unit root

Variables		Methods					
		Lag	LLC	Lag	IPS	Lag	ADF-Fisher Chi-square
Level	DEBTMV	8	-1.1047	13	-1.2532	13	4.6352[c]
			(0.1347)		(0.1051)		(0.0985)
	DIROWN	1	-1.0332	9	-1.2028	9	4.3959
			(0.1508)		(0.1145)		(0.1110)
	DY	5	-1.2197	12	-1.2261	12	4.5327
			(0.1113)		(0.1101)		(0.1037)
	EPS	14	-1.1979	16	-1.0927	16	4.0385
			(0.1155)		(0.1373)		(0.1328)
	FEES	5	-1.2067	7	-1.2324	7	4.5283
			(0.1138)		(0.1089)		(0.1039)
	FEMALE	5	-0.5545	13	-1.1055	13	4.0348
			(0.2896)		(0.1345)		(0.1330)
	GPM	1	-1.1801	7	-0.7740	7	3.0051
			(0.1190)		(0.2195)		(0.2226)
	INDNEDS	3	-0.6293	8	-1.2743	8	4.7024
			(0.2646)		(0.1013)		(0.0953)
	LIBASS	3	-1.1591	15	-1.1978	15	4.4233
			(0.1232)		(0.1155)		(0.1095)
	LNEBIT	2	-0.8184	5	-1.2125	5	4.5097
			(0.2066)		(0.1127)		(0.1049)
	LNMV	5	-0.9962	17	-1.1691	17	4.3137
			(0.1596)		(0.1212)		(0.1157)
	LNSTDEBTLTDEBT	5	-0.3956	8	-1.2380	8	4.5804
			(0.3462)		(0.1079)		(0.1012)
	LNTAXCF	1	-0.0861	6	-0.5246	6	2.2731
			(0.4657)		(0.2999)		(0.3209)
	LNTOTASSETS	4	-1.1261	11	-1.0175	11	3.7810
			(0.1301)		(0.1545)		(0.1510)
	LNTOTDEBT	4	-1.1169	8	-1.1380	8	4.2082
			(0.1320)		(0.1276)		(0.1220)
	LNTOTREM	7	-0.9594	11	-1.0731	11	3.9036
			(0.1687)		(0.1416)		(0.1420)
	LTDEBTMV	9	-1.1374	14	-1.2147	14	4.4878
			(0.1277)		(0.1122)		(0.1060)

	LTDEBTTOTASS	1	-0.7153	1	-2.6670	1	11.3083
			(0.2372)		(0.0038)		(0.0035)
	MEETING	1	-0.7062	2	-0.5978	2	2.5652
			(0.2400)		(0.2750)		(0.2773)
	NCFMV	12	-1.0613	15	-1.1973	15	4.4212
			(0.1443)		(0.1156)		(0.1096)
	NONINEDS	6	-1.1038	9	-1.2310	9	4.5332
			(0.1348)		(0.1092)		(0.1037)
	OPM	0	-1.0881	5	-1.2076	5	4.5213
			(0.1383)		(0.1136)		(0.1043)
	REMUNNETINC	4	-1.1963	10	-1.2388	10	4.5821
			(0.1158)		(0.1077)		(0.1012)
	ROA	2	-0.1991	16	-1.1693	16	4.3159
			(0.4211)		(0.1211)		(0.1156)
	ROCE	3	-0.5046	3	-3.5367[a]	3	16.5969*
			(0.3069)		(0.0002)		(0.0002)
	ROE	2	-1.1436	14	-1.0932	14	4.0433
			(0.1264)		(0.1372)		(0.1324)
	TOBINQ	8	-1.0914	17	-1.2779	17	4.7245***
			(0.1376)		(0.1006)		(0.0942)
First Difference	ΔDEBTMV	2	-9.9209[a]	2	-9.5163 [a]	2	60.1142
			(0.0000)		(0.0000)		(0.0000)
	ΔDIROWN	0	-24.8326 [a]	0	-23.9638 [a]	0	42.0915 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔDY	3	-1.7905[b]	3	-8.5624 [a]	3	53.6890 [a]
			(0.0367)		(0.0000)		(0.0000)
	ΔEPS	1	-8.4405 [a]	1	-8.8314 [a]	1	55.3312 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔFEES	2	-5.5652 [a]	2	-7.8207 [a]	2	41.8986 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔFEMALE	1	-6.9311 [a]	1	-10.4343 [a]	1	64.2037 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔGPM	0	-11.7182 [a]	0	-11.1629 [a]	0	23.6293 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔINDNEDS	0	-13.2049 [a]	0	-13.4781 [a]	0	77.4781 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔLIBASS	0	-15.9581 [a]	0	-15.5410 [a]	0	83.2555 [a]
			(0.0000)		(0.0000)		(0.0000)
	ΔLNEBIT	0	-13.4773 [a]	0	-13.5125 [a]	0	18.4207 [a]
			(0.0000)		(0.0000)		(0.0001)

ΔLNMV	0	-12.5573 [a]	0	-12.6364 [a]	0	76.6104 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔLNSTDEBTLTDEBT	1	-6.9263 [a]	1	-9.4357 [a]	1	59.4742 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔLNTAXCF	0	-12.8409 [a]	0	-11.9274 [a]	0	18.4207 [a]
		(0.0000)		(0.0000)		(0.0001)
ΔLNTOTASSETS	0	-9.2809 [a]	0	-10.3041 [a]	0	64.7760 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔLNTOTDEBT	0	-15.2933 [a]	0	-13.7565 [a]	0	80.3305 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔLNTOTREM	3	-7.5926 [a]	3	-7.5558 [a]	3	35.6295 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔLTDEBTMV	2	-9.9197 [a]	2	-9.4992 [a]	2	60.0014 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔLTDEBTTOTASS	0	-16.0733 [a]	0	-13.6347 [a]	0	79.9941 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔMEETING	1	-4.8010 [a]	1	-6.9636 [a]	1	37.2636 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔNCFMV	1	-13.4662 [a]	1	-12.4338 [a]	1	75.8463 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔNONINEDS	0	-15.8042 [a]	0	-13.8517 [a]	0	78.3966 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔOPM	0	-8.5261 [a]	0	-10.4488 [a]	0	65.6503 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔREMUNNETINC	2	-4.1664 [a]	2	-10.2866 [a]	2	64.9779 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔROA	1	-4.8773 [a]	1	-9.3246 [a]	1	58.7289 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔROCE	2	-2.7443 [a]	2	-8.5945 [a]	2	53.7712 [a]
		(0.0030)		(0.0000)		(0.0000)
ΔROE	1	-6.2134 [a]	1	-9.6636 [a]	1	60.9774 [a]
		(0.0000)		(0.0000)		(0.0000)
ΔTOBINQ	1	-10.6841 [a]	1	-11.3661 [a]	1	70.9471 [a]
		(0.0000)		(0.0000)		(0.0000)